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REPORT

OF THE

CHIEF ENGINEER

ON THE LOCATION AND ESTIMATES OF COST

OF THE

CLEVELAND AND PITTSBURGH RAILROAD.

ACCOMPANIED BY THE REPORT OF PROF. ALEXANDER C. TWINING,
CONSULTING ENGINEER, AND THE STATEMENT OF
THE PRESIDENT AND DIRECTORS TO THE
STOCKHOLDERS OF THE COMPANY.

HUDSON:
OBSERVER PRESS.

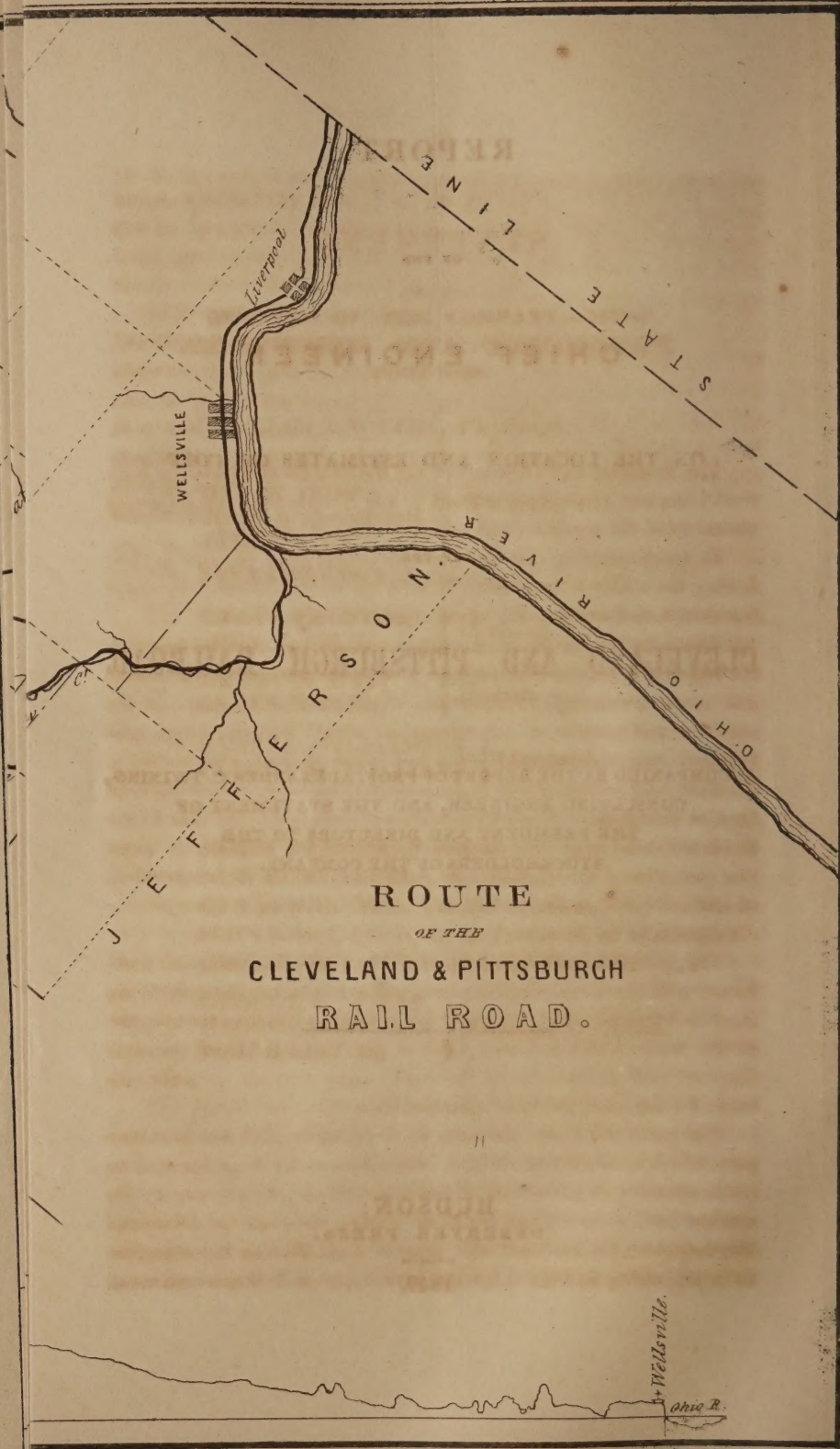
1849.



PROFILE OF LINE
Horizontal Scale 20,000 ft to the Inch. Vertical 500.
BASE. Surface of LOW WATER in the OHIO RIVER.

ROUTE
OF THE
CLEVELAND & PITTSBURGH
RAIL ROAD.

OHIO RIVER
STATE LINE



ROUTE
OF THE
CLEVELAND & PITTSBURGH
RAIL ROAD.

11

Wellsville.

Ohio R.

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1849.

OFFICERS OF THE COMPANY---1848-9.

DIRECTORS.

WILLIAM J. TOTTEN, *Pittsburgh.*

JAMES STEWART,
HENRY COPE,
JOHN S. McINTOSH,
JAMES ATEN, } *Wellsville.*

JAMES FARMER, *Salineville.*

CYRUS PRENTISS,
JOHN B. KING, } *Ravenna.*

HENRY N. DAY,
JAMES BUTLER, } *Hudson.*

SAMUEL WILLIAMSON,
ELLERY G. WILLIAMS, } *Cleveland.*

JAMES FARMER, *President.*

SAMUEL FOLJAMBE, *Secretary.*

CYRUS PRENTISS, *General Treasurer.*

JOHN S. McINTOSH, *Local Treasurer, at Wellsville.*

GEORGE R. EICHBAUM, *Chief Engineer.*

GEORGE E. WHITE,
GEORGE ROBINSON,
ISAIAH LINTON, } *Assistant Engineers.*

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STATEMENT
OF THE
PRESIDENT AND DIRECTORS.

The President and Directors of the Cleveland and Pittsburgh Railroad Company respectfully submit to the Stockholders the following statement of the condition and prospects of their enterprise.

In communicating this statement they take great pleasure in their having the ability to accompany it with the very satisfactory reports of the chief and consulting Engineers employed on the work.

The attention of the Stockholders will be particularly drawn to the report of Professor Twining, who, at the solicitation of the Board, has made a thorough examination, as consulting Engineer, of the character and promise of our enterprise. Prof. Twining's high professional character, acquired in a long experience in public works at the East, will command for his representations every where the most implicit confidence. It is with peculiar satisfaction that the Board refer to his testimony respecting the judiciousness of our location, the superior character of the work thus far performed, and the high importance of our enterprise to the public, and its corresponding promise of productiveness to the Stockholders.

The more full and detailed report of the Chief Engineer, Col. Eichbaum, with the accompanying tables, will exhibit more particularly the stage of progress which the work has reached, as well as the qualities of the route which has been selected, the thorough and at the same time economical character of the work under contract, with the estimates for the work yet to be provided for.

One particular in the character of the work is alluded to in this report, which is worthy of distinct consideration; its importance as an instrumentality in the system of national defense. Connecting by the shortest line the two great bodies of waters, those of the Ohio and Mississippi on the one hand, and those of Lake Erie on the other, the latter separating us from a foreign territory, it will form a communi-

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cation, which, in the event of hostile operations, might prove of incalculable importance to the nation. Along no other possible avenue could governmental movements be conducted so securely and expeditiously between the Lakes and the Ohio river.

While generally commending to the careful consideration of the Stockholders and the public this report of their Engineer, thus sustained by the accompanying report of Professor Twining, the Board would also invite their attention to the following considerations *on the condition and prospects of the work undertaken by the Company; the character and qualities of the route that has been adopted; and the promise which the enterprise holds out for business and consequent productiveness.*

I. THE CONDITION AND PROSPECTS OF THE WORK.

The whole line was definitely located from the end of the pier at Cleveland through to the Ohio river at Wellsville in May last. Previously to the location the country had been carefully explored and full surveys made with comparative estimates of grades, curvatures and distances on the different tracks examined. So thorough has this exploration been, that the Board feel great confidence that the location is most judiciously made and reflects great credit on the skill and industry of the Chief Engineer as well as upon his efficient assistants. As to the character of this location it is sufficient simply to refer to the testimony of Professor Twining.

Fifty-one miles of the located line have been put under contract on very favorable terms for the Company. Some of the sections have been completed; the work on the others is advancing steadily, while a part will be subject to a re-letting from the failure of the contractors for one cause or another to fulfil their contracts. The particulars are sufficiently detailed in the report of the Chief Engineer and the annexed tables.

The Board have constantly aimed at securing a work of a high character and fully adequate to the great business which is confidently anticipated to be done on the road. The excavations, embankments and masonry have, so far as deemed needful, been prepared for a double track, which the anticipated business of the road, it is believed, will sooner or later render necessary. The masonry, also, has been provided for a track of the most solid and enduring character. It will be

seen in the table of estimates that calculation is made for a rail of the heaviest and best character. The experience of other railroad companies, which had at first adopted a light rail but have been induced at great sacrifice to abandon it for a heavier one, has sufficiently demonstrated the wisdom of this determination.

It is a source of high satisfaction to the Board that while they have freely calculated for a work of the first character in all respects, the expenditures actually incurred have been extremely low for the amount and quality of work effected. The expenses of organization, exploration, location and supervision, as well as the contracted prices of graduation and masonry thus far, will compare favorably, it is believed, with those of any public work yet undertaken in our country. It is the good fortune of the Company to find all along the route the richest abundance of materials of all kinds, except iron, for the construction of the road. Excellent quarries of stone easily worked, beds of gravel and sand for ballasting, and timber are found in close proximity to the line of the road at all points.

The Board feel a greatly increased confidence that the work, which every consideration of public utility and private interest has from the outset seemed to demand, will now speedily be consummated. It has reached a stage in its progress which dissipates any shadow of apprehension in the hearts of any as to its ultimate success. The great difficulties have been surmounted; while the rich promise of remuneration to all who may have invested their funds in the enterprise gives assurance that the additions to its capital yet necessary will be easily secured.

II. THE CHARACTER AND QUALITIES OF THE ROUTE.

The Legislature of Ohio in providing, by the charter, that the road should take "the most direct, practicable and least expensive route to the Ohio river at the most suitable point," evidently regarded the work as promising to constitute a great "trunk" communication between Lake Erie and the Ohio river. It was apparent from a glance at the map that a line of railroad from Cleveland to Pittsburgh which should strike the river just at the point where it makes its great bend to the southward in its descent—precisely at its north-westernmost point, could not be materially longer than any which should cross the Ohio and Pennsylvania State line at a more northerly point; while the surface of the

country, which at the time the reviving act containing this provision was passed had been more fully ascertained than when the original charter was granted, seemed rather to invite the road thus early to the valley of the Ohio, in preference to a point higher up the river. But decisive considerations in regard to this question, which altogether outweighed that of any supposable gain of distance by another route, were, that no additional legislation in a sister state would be needed in order to secure to the Company a work complete in itself, as it would have favorable termini on the Lake and River with a steam communication already open to Pittsburgh; that far less extent of road would need to be constructed in order to enable the road to do a full business; and, above all, that by this route, the best and shortest communication would be opened between the Lakes and the Ohio river, thus at once doubling the business to be done on the road. These considerations, or even either one of them, was sufficient to justify the possible two or three per cent. increase of distance in this route over one that should strike the Ohio river in another State. The access to the large coal deposits on the Yellow Creek route, furnishing of itself a business sufficient to yield a good income on the whole investment in the road, is still another consideration, decisive in its own character of the question.

Independently, however, of these considerations, the Board have reason to believe from the extended explorations made by our own Engineers together with the explorations made for other interests at various times, that no feasible route materially shorter, measured by the only true criterion in such matters—working time and expense, can be found in the broken country which lines the banks of the Ohio. A route that promised slightly better in regard to length, by way of Salem and the Little Yellow Creek, and which was actually surveyed under direction of this Company, was finally abandoned on account of its impracticable character. The high grades and sharp curves as well as its great expensiveness most imperatively forbade its adoption.

The position of Wellsville, the point at which the road strikes the Ohio river, is remarkable, as being nearly on a straight line between Pittsburgh and Cleveland, and at the same time being at the point where the river approaches nearest the Lake. By Mitchell's Reference and Distance Map of the United States, a straight line from Pittsburgh to Cleveland is but two and a half miles shorter than one between the same points deflected so as to pass through Wellsville. Being situated, according to the same authority, fifteen miles north of Pittsburgh,

just at the point where the Ohio makes its great southern bend, it is nearer to Cleveland than any other point on the river is to any point whatever on the Lake. Nature thus has most distinctly indicated the route for a road which should both connect the great thoroughfares of the Lake and the River at the points where they most approximate to each other, and at the same time be the channel of the swelling commerce that is to pass between the eastern marts and the vast and fertile territories covered by the north-western States.

While a directive point in the route, whether for a road between the Lake and the river, or between Cleveland and Pittsburgh, was thus decisively indicated by the course of the Ohio, relatively to the line of the southern shore of Lake Erie, the route to that point from Cleveland has been found highly feasible and direct. The Reports of the Engineers, with the tables of Grades and Curvatures, bear a very favorable testimony indeed in regard to this point. The grades are none of them heavy, while the summit is near the center of the line ; which gives a favorable feature to the working character of the road.—The curves are none of them of excessive sharpness, while the aggregate amount of curved line bears but a small ratio to the amount of straight line. The particulars are detailed in the Reports and accompanying tables.

III. THE BUSINESS PROSPECTS OF THE ROAD.

The report of Professor Twining exhibits in a general view the great amount of business which is sure to accumulate upon this thoroughfare. As the road will form a new avenue for commerce, it is difficult to collect all the items of its business from any existing facts. Only a general approximation can be hoped for. Indeed, a statement of the character of the business with a general representation of its present amount will be far more satisfactory than mere statistical tables, however extended or however detailed. It will be convenient to distinguish the kinds of business into the following:—1. The coal transportation; 2. The local business attracted to the road from the points along the line; 3. The transit business between Lake Erie and the Ohio river; 4. The business between the north-west and the Atlantic cities and Pittsburgh, or as it may be called, the proper Cleveland and Pittsburgh business.

1. *The Coal Trade.*—This is a business which the opening of the road will almost entirely originate; as it opens for the inexhaustible deposits of the Yellow Creek valley a ready access to the best of markets. Both the caking or bituminous coal and the cannel or parrot coal are found in the valley directly on the line of the road. The market for it will be at the villages and towns along the northern part of the road for manufacturing and ordinary domestic uses, but chiefly at the northern terminus of the road, Cleveland, for the supply of the steamers on the Lakes. As it can be delivered at a profit on the Lake at Cleveland, for two dollars and a half a ton, although traversing nearly the whole line of the road from the River to the Lake, there is every reason to believe that the great source of supply for all the steam commerce of Lake Erie may be determined at Cleveland; a consideration of great interest not only to that city, but, also, to the Railroad Company itself as bringing the Lake commerce directly in connection with its road. The consumption of coal at Cleveland even at the price of three dollars a ton, is now large, sufficient to supply two freight trains a day; the amount of receipts at Cleveland the last season being ascertained to be over 164,000 tons, or over 200 tons on an average for each working day in the year. This business, increased as it is almost certain to be, of itself, would sustain the road.

2. *The Way Business.*—The road passes through one of the most populous and flourishing portions of the State of Ohio. The rich grazing products of the Western Reserve with its characteristically enterprising population, and the fine wheat regions of the more southern part of the State will at once contribute to the income of the road, and receive from it a corresponding advantage in the increased facilities of access it will furnish to a favorable market. Both items of business, passengers and freight, must be large, even if calculated from well ascertained existing facts, some of which will now be presented.

First, in regard to passengers, it is ascertained that fifty passengers on an average pass each way from and to the river at Wellsville, each day through the year, and this, notwithstanding the inconvenience of access by the common roads over the hills along the banks of the Ohio. While at Hudson, a point on the northern division of the road, the number of passengers by the public coaches passing in the summer months average each way twenty-five a day. If now it be borne in mind that the greater part of the travel in this part of the country is

in private conveyances, and that, for a western country, it is well supplied with roads, in number if not in quality, passing in parallel directions, it will be seen that the absorption of travel on such a thoroughfare from way-points alone must be very large. It can not reasonably be estimated at less than what is equivalent to fifty through passengers a day each way, if the estimate should not rather be carried as high as one hundred.

In regard to freight, the different species furnished at points along the road may be estimated under the following heads: 1. Wheat products; 2. Other agricultural products; 3. Manufactures; 4. Merchandize.

The Wheat Business.—The road traverses the rich Wheat belt of country lying along and south of the Western Reserve line, and will take the transportation to market, to a greater or less extent, of the cereal products from the counties of Columbiana, Jefferson, Carroll, eastern parts of Tuscarawas and Stark, western parts of Mahoning and Trumbull, Portage, Summit and Cuyahoga.

The road crosses in these counties the Ohio and Pennsylvania canal at Ravenna, thirty-seven miles from Cleveland, the Sandy and Beaver canal near Rochester, sixty-seven miles from Cleveland, and the projected Ohio and Pennsylvania road near Mount Union about sixty miles from Cleveland. All these works must prove tributaries in cereal freights to this road; and so long as the best market shall be found at the north, the bulk of this kind of freight must traverse the longer portion of the road.

That the Lake ports will furnish the best outlets for the wheat products of Ohio, is certain, so long as Pennsylvania continues to produce so large an excess above its consumption, and the north-eastern part of the country consumes so much more than it produces; unless, indeed, the expenses of transportation through Pennsylvania and New Jersey should be so reduced as to compare favorably with the charges by more northern lines of conveyance. The present rates of charge, being according to the Patent Office Report for 1847, seventy-five cents a barrel, and twenty cents a bushel from Buffalo to Albany, and one dollar a barrel, and thirty to thirty-three cents a bushel from Pittsburgh to Philadelphia, together with the lower range of prices of flour in Philadelphia than in more northern markets, determine, so long as this state of things continues, the northern direction of cereal freights. The fact, also stated in the same report, that the expense of growing wheat in

Pennsylvania is so much less than in Ohio, shows conclusively that Ohio wheat must, until the change above alluded to takes place, seek a northern outlet. The bulk of the wheat and flour which now reaches the Ohio river is conveyed either down the river or to the Lake by the Erie Extension Canal. But an inconsiderable fraction comes into competition with the Pennsylvania products. This fact shows that the public works which are crossed by our road will, at least while the markets and freights continue as at present, all prove tributaries to our road in this class of freights. It is so with other works terminating at the Lake which are connected with interior improvements. Thus at Akron, the point of junction of the Ohio and Pennsylvania canal with the Ohio canal, the arrivals of flour on the Ohio canal to be consumed at Akron, or to be shipped by the Ohio and Pennsylvania canal were, in the year 1847, but 943 barrels; while there were cleared from that port 231,221 barrels. The quantity of flour and of wheat estimated as flour, which arrived at Akron in the same year by the Ohio and Pennsylvania canal was, 79,879 barrels; the quantity cleared by that canal was only 2,424 barrels. A considerable quantity of the wheat grown in the vicinity of the Sandy and Beaver canal during the past year, found its market at Cleveland. Such facts will, beyond all question, be shown in regard to all intersections of improvements running east and west with those running north and south.

Other Agricultural Products.—While the cereal products, together with the Bacon and Pork which are yielded chiefly along the more southern portion of the road, will seek thus the northern markets, the other agricultural products, with the exception perhaps of wool, raised along the northern division, will seek a southern market. The dairy produce of the Western Reserve thus finds its chief market down the Ohio river. Some idea of the extent of this business may be formed from the following facts. During the last season, according to the Portage County Whig, there were shipped from Ravenna alone 2,904,883 pounds of cheese, making an average of four and a half tons for every working day in the year. The books of the canal office at Warren exhibit the quantity of cheese cleared from that town as amounting in 1847 to 6,599,170 pounds or nearly eleven tons for each day in the year. The opening of a winter transit will greatly enhance the value and amount of this branch of agricultural products.

The shipments in 1847 from Franklin, a flourishing village lying two miles from the line of the road and five miles from Ravenna

amounted to over 4000 tons of agricultural products including wheat and flour.

Cleveland is the great outlet for the wool products of Ohio. In 1847, of the three millions of pounds, nearly, exported from the State, more than a million and a half was received by canal at Cleveland.

These facts demonstrate the favorable prospects of the road for commencing a heavy Way business in freights. The country which the road traverses is all fertile in a high degree, cultivated almost throughout, and is well settled by an intelligent, enterprising, thriving population.

Manufactures.—The portion of the Western Reserve traversed by the road is destined to become largely engaged in manufacturing enterprises. The almost inexhaustible amount of water power on the Cuyahoga and other smaller streams, the character of the inhabitants, and the facilities of obtaining the raw material as well as all the means of manufacturing industry, justify full confidence in this prediction. Just as fast as capital is developed, it is invested in this form. Large investments are now waiting the facilities of business furnished by this road. It is reasonable therefore to calculate on a considerable amount of income from the transportation of raw material, and manufactured fabrics; but no statistics of the present state of manufacturing production are at hand.

Merchandise.—The amount of merchandise to be transported will depend on the number and ability of the population. The ability is measured by the amount of taxable property which, in 1846 in the counties named, was \$22,415,246, or more than one-seventh of that returned for the whole state. The population in 1840 was 254,619; it now exceeds 300,000. If we suppose that but one-half of this population receive their supplies by this road and that but two-fifths of these are conveyed through this channel, there would still be left what would be equivalent to the exclusive supply of a population of 100,000, or of a town of ten thousand in every ten miles of distance along the road. The exclusive transportation of merchandise for ten towns of ten thousand inhabitants each, in the distance of one hundred miles, would constitute a no inconsiderable amount of income.

Particular facts justify such *a priori* conclusions. The amount of merchandise in the larger import of the term received at the single point of Ravenna the last season, was over 2,200,000 pounds, or over three and a half tons daily through the year.

If Ravenna be supposed to do one-tenth of the business along the line between Cleveland and the river then the whole amount of business at all points would be over thirty five tons daily. Yet it is estimated by the Editor of the Portage County Whig, by whom these statistics were collected, that "were there means of shipping produce, &c., in the winter season, at this point alone, there would be an increase of at least one hundred per cent." At Wellsville an average of 75 tons is shipped and a like amount received each day in the year. This is nearly sufficient to freight a daily train of cars.

It will appear from these data to be perfectly safe to calculate upon an immediate way freight and passenger business sufficient to yield a good income of itself to the work.

3. *The proper Lake and River Business.*—This business consists chiefly of the manufactures and merchandise from the eastern States destined for the Ohio and Mississippi vallies, and of the products of these vallies which seek a market along the lake coast and in the eastern States north of Pennsylvania. The eastern manufactures of cottons, shoes and clothing as well as an innumerable variety of other products, together with other light merchandise, prefer an inland conveyance even to points low down on the Mississippi. In return, the consumption of the products of these vallies, in the territory bordering along the lakes, and in the eastern States, as of sugar, molasses, cotton, hemp, lead and the like now sustains a heavy traffic.

No means are at hand for estimating the precise amount of this business, as it is, in the statistical returns, generally mingled with the trade of the interior. The following statements of the amount of imports at the lake ports from which public improvements lead to the river will evince this trade to be very large. It is one also constantly increasing and in a rapid ratio.

The imports at Cleveland during the year ending September, 1847,	
amounted in value to	\$4,505,096
At Sandusky,	7,147,261

The exports for the same period were,

From Cleveland,	\$9,728,369
" Sandusky,	3,598,667
" Erie in 1846,	1,073,246

It is worthy of notice that the opening of the Erie Extension canal through from the Ohio to Lake Erie had the effect at once of far more

than doubling the exports from the port of Erie; the exports for 1845 being but \$403,334; those for 1846 being, as above, \$1,073,246.

The register of business on the canal furnishes a more specific ground of estimate. The amount cleared at Beaver in the month of August, Sept., and October, 1848, was 11,473,278 pounds, of which 7,895,452 pounds or somewhat more than two-thirds was cleared for the Junction with the Ohio and Pennsylvania canal. This is supposed to be a fair average of the business for each three months of the season of navigation; and the arrivals are estimated to equal the clearances. The monthly average of business to the Junction thus estimated would amount to over 1300 tons each way or over 50 tons daily; and the whole amount cleared monthly from Beaver, to over 1900 tons, or not far from 75 tons daily.

That this Lake and River trade must be commanded by our road is apparent from a comparison of the inducements it presents with those of any other work. The shortest rail road connection existing or projected is that which leaves the Lake at Sandusky. This road is, however, 230 miles in length—considerably more than double that of the Cleveland and Pittsburgh road. Freight can be delivered at Cincinnati by this latter road from the Lake within a few hours as soon as from Sandusky, and at half the price. This road has this superiority over either of the canals that connects the river and the Lake, that it carries in much less time and can carry also at considerably less rates, being more than 40 miles shorter than the canal route by the Pennsylvania and Ohio canal, more than 200 than the Ohio canal, and more than 36 than the Erie Extension canal. It must thus be the great thoroughfare for the freight business between the Lake and Cincinnati. But it should be borne in mind that as the charges for freight on the Ohio river from Wellsville to any other point on the Ohio or the Mississippi, are nearly the same as from Cincinnati, it will present still greater inducements to freight destined to any other point than Cincinnati, as compared with any road terminating at that city.

4. *The Cleveland and Pittsburgh Business.*—Under this head is comprehended the passenger business between these points, including the travel from the north-west to the Atlantic cities; and, also, the interchange of manufactured products between Pittsburgh and the Lake, as well as also the merchandise, particularly in the winter season, shipped from the East to the lake country.

When this work is completed, or soon after, a continuous steam

communication will be opened between Lake Erie and the Atlantic cities, available in all seasons of the year, and until the New York and Erie Railroad is completed, the only one. This communication will form by far the shortest connection between Cleveland and New York. The following statement of distances will exhibit at once the commanding position of Cleveland in reference to the trade and travel between the eastern cities and the north-western country:

From Cleveland to Dunkirk,	170 miles.
Dunkirk to New York by N. Y. and Erie Railroad,	480 "
Cleveland to New York by Dunkirk,	650 miles.
Cleveland to Pittsburgh,	145 miles.
Pittsburgh to Philadelphia by Central road,	358 "
Cleveland to Philadelphia,	503 miles.
Philadelphia to New York,	88 "
Cleveland to New York by Pittsburgh and Philadelphia,	591 miles.
Cleveland to Harrisburgh by Pittsburgh,	396 miles.
Harrisburgh to Baltimore by York,	86 "
Cleveland to Baltimore by Pittsburgh,	482 miles.
Cleveland to Wheeling,	141 miles.
Wheeling to Baltimore by B. & O. Railroad,	384 "
Cleveland to Baltimore by Wheeling,	525 miles.
Cleveland to Washington City by Wheeling,	547 "

The shortest route, it appears from this statement, from Cleveland to New York is by the Cleveland and Pittsburgh road, being 59 miles shorter than by the New York and Erie railroad, while the distance to Philadelphia by this road is 147 miles less than by Dunkirk to New York, and only 23 miles more than from Dunkirk to New York. The travel to New York will thus be strongly attracted along this route from Cleveland and of course from all points west, even in summer; as the distance will be less, the communication will be on railroads nearly the whole way and ultimately the whole distance, and consequently in much less time, while the uncertainties of lake navigation will be avoided. In the winter, it will be the only route between Cleveland and the east.

It may be supposed, however, that this portion of the business will be intercepted by the Ohio and Pennsylvania Railroad. Even in that case more than half the distance will be run on the Cleveland and Pitts-

burgh road. But until the completion of that work above the mouth of Big Beaver to Pittsburgh, if experience in such cases be the ground of judgment, there can be no doubt that the Wellsville route with a single transshipment would be preferred to another with two transshipments; where, at the very best supposable, but a trifling advantage in any point—of time, expense or comfort, can be gained by a change.—It is only when a continuous road shall have been constructed from the point of intersection to Pittsburgh that any diversion of travel even, much less of freight, is likely to be effected. It would hardly be rational now, in the incipient operations of that road, to attempt to forecast the position of things in the commercial world which will then control the direction of trade and travel. Should no extension of the road from Wellsville to Pittsburgh, as is now anticipated, have been effected, the Baltimore and Washington City travel would still be determined to the river, if not also that destined to more northern cities. On the whole, considering the contribution it will make in other kinds of business, there can be no doubt that the construction of this road will beneficially affect the interests of the Cleveland and Pittsburgh Company.

The amount of travel thus determined along this route is beyond certain calculation. Taken with the way travel, the whole amount of passenger business may very safely be estimated at from one hundred and fifty to two hundred a day each way, at the opening of the road. A steady and rapid increase upon this may, also, be safely relied on.

The freight business under this head includes as the two leading items the transportation of the manufactures, principally of glass and iron from Pittsburgh, and of merchandise from the East.

The manufacturing interest of Pittsburgh is now heavy and rapidly increasing. More than two-thirds of its active population, amounting now, including dependencies, to not far from one hundred thousand, are connected with the proper manufacturing business.

But a small portion of the manufactured products of Pittsburgh, however, now find a market in the Lake country. This is to be accounted for chiefly from two reasons; 1. from the want of a regular, speedy, cheap communication open during the year, and 2. from the fact that western merchants now passing by the north route do not come in contact with the manufactures and products of Pittsburgh.

When a cheaper, more regular, and quicker communication shall be opened, and the tide of western commercial travel flowing east shall

pass through the very heart of the great manufacturing metropolis of the west, an incalculable impulse will be given to this branch of trade. There is no reason, other than those mentioned, why the manufactures of Pittsburgh should not be spread over the whole north-west, embracing a lake coast of 1200 miles and occupied by a population of not less than one million and a half.

Even now the records of trade show a business of a very heavy amount. In 1848 there was received at Cleveland by the Ohio canal over fifteen and a half million pounds of wrought iron and nails, mainly from Pittsburgh. At Akron, the same year, there was received by the Pennsylvania and Ohio canal 18,209,336 pounds. This last item, of itself, would give a freight of thirty tons each day through the year.

The merchandise from the Atlantic cities, particularly of the lighter and more valuable kinds, and in the winter will constitute no inconsiderable item of business done by the road.

The opening of such a communication will enable the merchant to supply himself during any portion of the year; instead of laying in a stock at once for the whole six or eight months of suspended communication, as now. It will thus enable him to transact a far heavier business with the same capital, and, for this reason, as well as also by preventing an accumulation of unsaleable goods, at better rates for the purchaser.

The following statistics, taken from the returns accompanying the memorial of the Chicago Convention, exhibit the amount of imports at the Lake ports mentioned for the year ending Sept. 1, 1848.

Ohio ports west, and inclusive of Cleveland,	\$16,045,188
Michigan ports,	7,276,829
Wisconsin,	1,024,050
Chicago,	2,641,852
Total of imports in value,	\$26,987,919

The above statement does not include a number of smaller ports.

When it is considered that Lake Erie is open for navigation at Cleveland for a number of weeks longer in the year than at the mouth of the Lake, and that this road will form the only communication between that city and the East during the close of lake navigation, it is not unreasonable to calculate upon a heavy merchandise business to be done on the road for the north-western States.

It should be remarked in regard to these two last mentioned departments of business, the Lake and River, and the Cleveland and Pittsburgh business, that while distinct and independent to a certain extent, they are in no respect antagonistic. No interest to be favorably affected by the opening of the one channel will be injured by the other. Boston and New York, deeply interested as they are in the opening of this inland communication for the free interchange of western agricultural produce on the one hand, and cotton manufactures on the other, lose nothing by the opening of a new channel of trade and travel to Philadelphia and Baltimore; while the last named cities will lose no trade which they now control. On the other hand, the proper business of each great mart will still flow freely into it, only with a fuller tide, inasmuch as its internal springs will receive from each communication a new development.

When all these various items of business are taken together into view—the coal traffic for manufacturing and domestic uses and especially for the steam commerce on the Lakes; the way-business in the transportation of passengers and of freight for a country rich in agricultural products seeking a distant market, and in manufacturing resources, and consuming a large amount of products from other parts of the country; the Lake and River business exchanging the products of manufacturing enterprise in the north-east for the heavy staples of the south-west; and the proper Cleveland and Pittsburgh business both passenger and freight, few if any of the public works in this country will be ranked higher than this in respect to the amount of business which it will be able to command.

Corresponding to this amount of business, of course, will be the amount of productiveness which the enterprise promises to those who engage in it. The data on which a general calculation on this point is to be made are as follows:

1. The exemption of the Stock from taxation.
2. The low cost of construction, being but \$20,000 a mile including equipments, while five of the leading roads in New England, viz.: the Boston and Lowell, Boston and Providence, Boston and Worcester, Eastern, and Western, average over \$52,000 a mile; yet the net earnings in 1846 on these roads, was eight per cent. on the entire cost.

3. The low working expenses from the favorable grades and the cheapness of fuel.

4. The various and rich sources of income as already detailed.

Entertaining these views of the importance of this work to the public, and of its productiveness to the Stockholders, the President and Directors feel themselves impelled to the most energetic efforts to effect the earliest possible completion of their work. They confidently hope in the course of a few months to put under contract for graduation the remaining part of this line from the lake to the river. Relying on the attractions which the work presents to capitalists and others as a mode of investment, they entertain the belief that the amount of additions to the capital Stock now necessary to enable them to provide for the early completion of the road will speedily be secured; and this important link in the great chain of railroads stretching from east to west across our country will be added as soon as in its continuous reaches westward this chain shall once strike the Ohio.

JAMES FARMER, *President.*

SAMUEL FOLJAMBE, *Secretary.*

Office of the Cleveland and Pittsburgh Railroad }
Company, RAVENNA, Dec: 22, 1848. }

REPORT

OF THE CONSULTING ENGINEER

**To the President and Directors of the Cleveland and Pittsburgh
Railroad Company.**

GENTLEMEN:

I have, in compliance with your request, examined carefully your route from Cleveland to the line of the State. In this labor I have been obligingly furnished by your Engineer, Col. Eichbaum, with the maps and profiles of the location and with every variety of information in relation both to the location and the constructions. Jointly with him I have also re-examined the estimates of work remaining to be done. The results of these examinations and observations I have now the honor to state.

The respects in which a route like yours presents itself for observation and consideration are, mainly, four: First, its mechanical properties and facilities—as, for example, its gradients curvatures, &c.: Second, its expense of construction and equipment: Third, its character as a profitable investment for stockholders: Fourth, its general relations of value or necessity to the counties it intersects, or that lie within its influence, and its connections with the great channels of intercourse between different parts of the Union.

The two northern divisions of your line are, mainly, in a region which extends from Lake Erie to within about thirty-five miles of the Ohio river, and which, although somewhat undulating, would be characterized rather as plain than as broken. The inequalities are, however, so considerable as to create occasional but slight deviations from an entire directness. The vallies of several minor streams—as the Mill creek, the Brandywine, Hahn's run and others materially assist the gradients. All this portion of your route, embracing nearly two-thirds of the whole, has a general directness with only a moderate amount of curvature. The gradients, also, are favorable, not being quite so high, in any instance, as forty feet to the mile, and descending,

mainly towards Cleveland, towards which the heavier transit may be expected to pass in consequence of the great tonnage of manufactured articles from Pittsburgh and of the coal hereafter to be spoken of.

As the line approaches within the influence of the Ohio river the country becomes more broken. The original high table is deeply channelled by tributaries of that river, with their branches and forks. It is necessary, therefore, to find a way along the vallies of those minor streams; and any route whatever will naturally be expected to prove somewhat circuitous. Two deep cuts occur, through the dividing ridges of minor streams, for short distances only—one averaging about forty feet for twenty four hundred feet of length, and the other about twenty-eight feet for a length of fifteen hundred feet. The Yellow Creek then offers a ready way to the Ohio river.

For four and three-fourths continuous miles, at the upper part of the Yellow Creek valley the gradient, as at present arranged, is fifty feet to the mile. With this exception the same fact holds good, as to this portion of the route, which was referred to in relation to the other,—that no gradient is found quite equalling forty feet to the mile. On no part of the route, from Cleveland to the Ohio nor onward to the State line is there any curve of a radius less than twelve hundred feet; and, although, as it has been already stated, the curvature on this smaller section is considerable, yet, on the whole route together, it would not affect the equated distance by more than two or three per cent. of the whole.

It appears, therefore, that the route is a feasible and excellent one in respect to its mechanical properties and facilities; to which I may add that the location, as now made, appears to me to have improved, substantially, the best facilities which the features of the country offer. Perhaps it may be well, also, to turn attention to the fact that the only existing gradient of fifty feet—although even such an inclination is not objectionable—can be reduced hereafter to forty feet at no excessive expense, if that should be esteemed desirable.

With respect to the second point of consideration—the expense of the construction—I need only say, after careful examination, that the estimates given in the Report of your Engineer, and now in course of publication, will, in my confident opinion, cover the expense of the graduation, masonry, bridging, &c., together with a heavy rail superstructure of the best description, and with all the depots, engines, and other equipments necessary for the business with which your road prom-

ises to open, in an abundance sufficient for ample dividends. After the road shall have been for some time in operation, and the business shall be greatly enhanced, additional expenditures will of course be requisite—in the laying, for example, of a second track, and for the enlargement of your facilities in other respects.

It may be proper here to state that the constructions already executed upon the fifty miles and over now under contract are of a very satisfactory quality. The culverts and bridges appear to be well founded and protected, and the masonry of a very high order of excellence.—Again, such is the abundance of excellent stone near the very track that the cost of the masonry is surprisingly low, in comparison with the quality.

In referring to the third point of view in which this route presents itself—namely, as a profitable investment for stockholders—there may be mentioned four principal sources of revenue which ensure its productiveness. The first of these is the local business of the region traversed by the improvement.

The great activity and productiveness of this region will be obvious, at a glance, to any one who inspects the public documents which record the vast amounts of produce from the interior received at Cleveland, and of imports from abroad taken in return, forming an aggregate of more than thirteen millions of dollars, annually, and rapidly increasing. It may be judged of by such facts as the following:—that, at Wellsville alone, the amount received from the interior in wagons, and returned to it from the Ohio river, is ascertained to be about seventy-five tons a day each way—enough for the largest part of the tonnage of an ordinary freight train. Two lines of stages both ways, besides branch lines, are now maintained from Cleveland to Pittsburgh. One of these lines is known, by actual inspection of the books at Cleveland, to have carried 2403 passengers, during the four months ending September 30th, 1848, in one direction; and this is believed to be a fair index of the similar transportation of the other through line. This would exhibit the existing travel, in both directions, at over twenty-four hundred a month during the traveling season; and it neither includes the large travel by the canal nor the larger by private conveyances. Experience has proved that a Railroad superseding an ordinary thoroughfare always accumulates upon itself the travel of every description and multiplies even that accumulation many fold.

It has been ascertained upon such thoroughfares as traverse the

interior of well cultivated and improved states that one half or more of their receipts very generally comes from the local business. Not to specify several eastern roads where this fact obtains, I will simply instance one western road which subsists upon local business only. The Madison and Indianapolis Railroad, which penetrates a purely agricultural region of Indiana for eighty-six miles from the Ohio, inland, and without any special advantages from mines or manufactures, derived, in its first year of through operation, an income of one hundred and fifty thousand dollars, and in its second year well nigh, if not quite two hundred and fifty thousand. At something approaching the same rate of increase it may be expected to continue. It has divided to its stockholders fifteen per cent. and the stock is now at one hundred and thirty-three per cent. in market. That road transacts for an adult male population of two hundred to a mile of its entire length—while the Cleveland and Pittsburgh road, after dividing the territory with other improvements that may compete with it, will transact for three hundred, very closely, to each mile of a similar population at least as vigorous and industrious. On such considerations is based the position that the local business alone will make yours a paying stock.

But a second source of revenue will accrue from the manufactures of Pittsburgh. To reckon the annual exports of this description from that place, which are the growth of not much more than a quarter of a century, at one hundred thousand tons, seems quite within bounds when we consider its half million of annual tonnage in the departures of steam boats on the Ohio alone. Under the stimulus of the several artificial channels soon to be added to her existing ones, and among which yours stands prominent, it is not extravagant, I presume, to estimate that Pittsburgh will transport upon your road, after a few years, as much annually as she now sends out in all directions through her various channels—thus contributing to swell your income by some three hundred thousand dollars, for this one item. In all this no account is made of the vast mass of travel from interior Ohio, along your route, to that city and back. It assumes, of course, your extension from Wellsville to Pittsburgh.

An inspection of the map will exhibit, at a glance, the very favorable connection which this Railroad must constitute and establish between Lake Erie in the one direction—floating its commerce of **ONE HUNDRED MILLIONS** of dollars, very nearly, to and from domestic ports—and the Ohio river, in the other, bearing past Wellsville, every

twelve months, over ONE MILLION OF TONNAGE in six thousand and more steamboat passages, ascending and descending. It is a striking fact, resulting from the low cost of transportation upon the river, that this connection of yours by the shortest possible distance, as mentioned above, will afford the cheapest attainable channel of transportation from the lake to Cincinnati.

But again, the Yellow Creek valley, for a distance of fifteen miles, abounds—together with other valuable mineral deposits—with excellent coal, in veins of from three to seven feet in thickness, for which your road will open a way to market. Excepting the coal basin in which Pittsburgh lies, including a region far to the north-west and north-east, I know of no bituminous coal in great quantities short of western Indiana to supply the demand arising and to arise upon the lakes and within the lake regions. For this supply Yellow Creek may be but one of many localities, yet so great will the demand become that one thousand tons a day, or just the amount, speaking in round numbers, that now comes down the Monongahela, can hardly do your part of the supply in question. This itself would constitute five freight trains a day, and much more than the entire burden of several among the best paying freight roads of the east, and would give an income of at least half a million of dollars.

It remains to speak of your important work, as an essential link—and in its extension to Pittsburgh, the only essential link remaining, when taken in union with the great central line of Pennsylvania—to complete one grand communication between the extremities of this Union; between the east and the upper lakes, together with the north-western States. To every reflecting mind the truth will be most apparent that the same circumstances of position which make this link essential to the community ensure to it an immense mass of through travel.

I may here state respecting the continuation of your work to Pittsburgh, a distance of forty-seven miles, that it is shown for the first eight miles, or to the State line, by your Engineer's survey, and it was also evident by my own inspection of the ground, that a cheap route exists. As to the parts above, along the west bank of the Ohio, the facts developed by the topographical survey by the government, executed some two years and more back, and made known to me through a communication from one of the United States engineers—strengthened also, by the opinions of your Engineer Col. Eichbaum

who, not many weeks ago, passed over and observed the route—evince that no considerable expense is to be incurred excepting at the Narrows and the crossing of Big Beaver at its mouth, and that the average cost of the line, including these localities, cannot be more than moderate.

Respecting the four distinct sources of income which you enjoy, as referred to above; namely, your local business; the transit between Lake Erie and the Ohio river, joined to the mineral deposits of your route; the transactions of Pittsburgh with your interior, with the Lakes and with the north-west; and the through travel of all the north-west on its way to and from the East; it may be reasonably laid down that either of them, ultimately, and a part of them immediately, will make yours a paying road. How liberal then must the income be from all the four united.

The importance to Pittsburgh of the Lake business is probably more immediate and more immense than any of her citizens, except the most far-seeing, have hitherto recognized. The like importance to Cleveland of the Pittsburgh connection and of the interior conjoined with the great channels leading eastward is believed to be already appreciated by many in that city. Both ideas will progressively and speedily develop themselves. Neither should I omit, wholly, to refer to the accession which your western prospects and resources will receive when a railroad from Cleveland to Sandusky shall commence the way, in that direction, towards distances and territories whither it fatigues the conceptions to follow.

General results, derived from a well understood experience, are our safest guide. The full statistics of this subject would constitute a pamphlet. Few, comparatively would trace it through; and yet it would be valuable. But the facts and considerations herein adduced have been purposely made brief and simple, that they may lie within the power of any well informed man to test and estimate. If, among all the railroads not yet executed, any man can point out one more certain to reward its stockholders, he will do what, in my present opinion, is impossible. And among all railroads which have been executed and are in operation, what one can be pointed out, comparing with yours in mechanical facilities, in ease of construction, in advantage of position, and in sources of revenue that does not, under prudent management, yield most ample dividends.

I am, gentlemen, respectfully your obedient serv't,

ALEX. C. TWINING,

Consulting Engineer.

REPORT

OF THE CHIEF ENGINEER.

To the President and Directors of the Cleveland and Pittsburgh Railroad Company.

GENTLEMEN:

I have the honor to report as follows upon the location, estimates &c. of the Cleveland and Pittsburgh Railroad.

At the date of my last report in 1847, a portion of the line from Wellsville north-westwardly, embracing a distance of 18 miles and 2960 feet, had been located and placed under contract. Since the date of that report the remainder of the line through to Cleveland has been located and 31 miles and 4720 feet have been placed under contract, extending from a point near Teagarden's about $1\frac{1}{2}$ miles east of the village of Mt. Union, in Stark county, through Ravenna to Hudson; making with the line previously let, 50 miles and 2400 feet at present under contract: the whole distance from Wellsville to the upper passenger depot at Cleveland being by the line of railroad as located 98 miles and 960 feet.

Between the northern end of the first letting and the southern end of the second letting, two routes were presented, one passing east of Hanover and by North Georgetown to the point near Teagarden's; the other, westward of Hanover and by the valley of Hahn's run to the junction near Teagarden's. The Hahn's run route is more level and otherwise favorable than the other route and has been adopted. The measured distance is about two miles greater than that by North Georgetown, but the difference is compensated by the amount of ascent and descent and of curvature being so much less on the Hahn's run route and the gradients more moderate; there being a considerable amount of 50 feet gradient necessary on the North Georgetown route,

while upon the adopted line by the valley of Hahn's run the maximum gradient is less than 40 feet. Between Hudson and Bedford the line of location is shorter than that of the former survey, and is also upon more level and favorable ground:

A survey has been made of the route from the Pennsylvania and Ohio State line to Wellsville. The line of survey follows the valley of the Ohio river, passing over high bottom lands for about $2\frac{1}{2}$ miles. Thence the line occupies the base of the hill as far as Liverpool, about $1\frac{1}{4}$ miles. Through Liverpool the line continues in rear of the Main street along the sloping ground upon which the town is partly built. Carpenter's run is crossed about two-thirds of a mile and Conrad's run about one mile below Liverpool, at the village of Jethro. From Jethro to the crossing of the run above James Wells' farm, about $1\frac{3}{4}$ miles, the line is generally along the hill side. From the point last named, the line passes directly over the bottom land and across Little Yellow creek into Wellsville. At the crossing of Little Yellow creek a considerable quantity of embankment would be requisite, and the road surface along this and other parts of the line should be at sufficient height to be beyond danger from river freshets. The excavation along the high bottom lands would be partly gravel. Along the hillside it would generally be clay with a small proportion of sandstone and slate.

Little Yellow creek would require a bridge of 100 feet span. The other streams are small. The distance from the State line to the work under contract at Wellsville is 8 miles and 360 feet. And the estimated probable cost of Graduation, Masonry and Bridging is \$47,000.

The total distance from Pittsburgh to the upper passenger depot at Cleveland is, as shown in the accompanying table, 145 miles and 2940 feet. The surface of Lake Erie at Cleveland is 76 feet lower than the surface of low water in the Ohio river at Wellsville. The located line between Wellsville and Cleveland has been arranged into three divisions. The first or Southern division begins at Wellsville and ends at Station 707 near the mouth of Hahn's run. The Middle division extends from the last named point to Ravenna, and the Northern Division from Ravenna to Cleveland. I shall now proceed to describe the route and character of the line of location, and the work done &c. on the several divisions.

The first or Southern division, begins at the depot at Wellsville and extends along the valley of the Ohio $2\frac{3}{8}$ miles to the mouth of Big

Yellow creek, the valley of which is then followed about 3 miles to the junction of the Big Yellow creek with the North Fork, which is ascended to the mouth of Nancy's fork $14\frac{1}{2}$ miles from Wellsville, and about half a mile east of Salineville. From this point the line is continued north-westwardly along the valley of Nancy's fork to Station 980 near the Yellow creek summit.

Along Big Yellow creek and the North Fork the line generally occupies the slope of the hill, crossing the valley occasionally to avoid sudden bends or unfavorable ground. Several bridges are necessary on this part of the line. The two bridges across Big Yellow creek will each have a span of 150 feet; the bridges across the North Fork will each have two spans of from 40 to 60 feet each. At some of the crossings the necessity of bridging is obviated by turning the stream through a new channel. The valley of Nancy's fork is more direct and the line is generally on the hill side. Along the river and Big Yellow creek, the road surface is sustained at a height sufficient to guard against the freshets of the Ohio. The unprecedented height of the freshet which occurred last year in the North Fork and Nancy's Fork afforded a sure mark for the adjustment of the height of the road surface along those streams. The material along North and Nancy's forks is generally clay or gravel with sandstone and slate—with veins of coal and some iron ore. From Station 980 the line crosses the summit which divides the waters of Yellow creek from those of little Beaver, near Mr. Arthur's, 19 miles from Wellsville; it then descends a branch of Brush run (a tributary of little Beaver) to a point opposite McQuilkin's Mill; thence after passing Hugh Macauley's and ascending Metzger's branch of Brush run, it crosses the summit dividing the waters of Little Beaver from those of Sandy, near Mr. Winder's. Thence descending the valley of Holland's run, the line reaches the valley of the Clear Fork of Sandy about $1\frac{1}{2}$ miles westwardly from Hanover. The line then follows the valley of the Clear Fork and after crossing the Sandy and Beaver canal near Rochester, passes to the end of this division near the mouth of Hahn's run.

The cuts across the Yellow creek and Sandy summits constitute the most expensive work on the route. The material of excavation, so far as the Yellow creek summit, is nearly the same as that along Yellow creek; from Brush run across to the valley of Sandy there appears to be more slate. Along the Clear Fork the line generally occupies the gentle slope of the side of the valley which is remarkably straight.

The work will be mostly light; the material generally clay or gravel. The line under contract between Wellsville and Station 980 is divided into 18 Sections of about a mile each; of these, Section No. 1 is finished. Section 2 is far advanced toward completion; the high embankment at McQueen's run is nearly up to grade and the culvert masonry of the Section is complete.

Section No. 3, one of the heaviest on the route, is nearly finished; the cut across the point at the mouth of Big Yellow creek is nearly done and the culverts are all built. On Section No. 4 the culvert masonry is done and also a small quantity of excavation and embankment. On Section No. 5 about one-half of the earth work is done. Section No. 6 passes the junction of the Big Yellow creek and North Fork. The substantial stone dam across the old channel of Big Yellow creek is now complete, and that stream runs through a new channel which has been excavated, leading into the ordinary channel a short distance below the lower crossing of the old channel, which is bridged to pass North Fork. The abutments and pier of this bridge are nearly complete; the double flooring of squared timber upon which the masonry is built rests upon a bed of gravel $7\frac{1}{2}$ feet below the surface of low water in the stream. The graduation of the Section is nearly finished. On Section No. 7 the culvert masonry is complete and $\frac{3}{4}$ of the bridge masonry has been done; about $\frac{2}{3}$ of the grading has also been done. Section No. 8 has about half of the grading done, and the bridge and culvert masonry completed. Some of the abutments on Sections 7 and 8 have rock foundations, but in a few cases, after excavating from 7 to 8 feet below the surface of low water without meeting rock, double platforms of squared timbers have been put in and the masonry built upon them. The stone used in this and other masonry along Yellow creek is sandstone. The style of the bridge-masonry is rock-range-work; the stone are generally large and well-shaped and accurately prepared and laid. The bridge-masonry that has been built on the various sections of this line is of the most substantial quality.

On Section No. 12 some excavation has been done at the cut at Ogle's bend, and some embankment formed by the material out of channel. Section No. 15 begins near the mouth of Nancy's Fork opposite Salineville; about one-third of the graduation has been done—the culvert masonry has not been commenced. The graduation of Section No. 16 is about one-third done, and the arched culvert at Rose's run is finished. On Section No. 17 the excavation and embankment

are nearly half done and the large arched culvert is finished. The masonry of this and Rose run culvert is ranged work of the most substantial character. Section No. 18 is finished excepting trimming. These four last sections have a considerable quantity of rock and slate excavation.

I would refer you to the accompanying table A, for details of the estimated quantities and value of the graduation, masonry and bridging done, and the estimate of the amount yet to be done upon the line under contract, together with the estimated probable cost of the graduation, masonry and bridging, on the part of this division not yet under contract. A statement is appended to the table showing the length of the line under contract, and of that which is not yet under contract.

MIDDLE DIVISION.

From Station 707 near the mouth of Hahn's run the line passes along the valley of Hahn's run northwardly as far as the Thomas road, from which point it passes over the Mahoning summit near Mr. Packer's, and thence to the beginning of the line last put under contract at the point near Teagarden's, about $1\frac{1}{2}$ miles east from Mount Union. The valley of Hahn's run, as far as the line follows it, is very direct in its course. The bottom of this valley is generally wide, and the hills rise abruptly on each side of it; some rock will occur at several points, but generally the excavation will be clay or gravel. The excavation at the Mahoning summit, and thence to Teagarden's will be mostly clay. There appears to be an abundance of gravel for ballasting along the valley of Hahn's run. That stream has a very gradual fall and its freshets do not exceed five feet in height above the surface of low water. Cope's run is the principal stream crossed between the Mahoning summit and Teagarden's. From the point near Teagarden's the line of location passes through Freedom and Lima, and after crossing the South line of Portage county is continued over an undulating surface through Atwater, crossing several small branches of the Mahoning, and thence passes along the ground dividing the waters of Mahoning from those of Breakneck, a branch of the Cuyahoga, and crosses the Pennsylvania and Ohio canal at Ravenna. The streams crossed on this division are small. After leaving the valley of Hahn's run the line reaches the Mahoning summit about $39\frac{1}{2}$ miles from Wellsville, and passes with slight depressions the vallies of several small streams which run into the Mahoning.

The line under contract between Teagarden's and Ravenna is divided into sixteen sections; upon the most of these sections the greater part of the culvert masonry has been done, and the graduation has been in progress. Section No. 4 is finished. On section No. 6, passing Lima, some of the excavation has been done, and part of the culverts are in. The contractors have prepared a temporary track &c., for carrying the material from the cut near the Reserve line to the fill near Deer creek. On section No. 16 the graduation is nearly half done.

Table B. contains details of the estimated quantities and value of the graduation, masonry and bridging done, and the estimate of the amount yet to be done upon the line under contract, together with the estimated cost of the graduation, masonry and bridging of the part of this division not yet under contract. Annexed to that table is a statement showing the length of line under contract, and length of the part not yet under contract.

NORTHERN DIVISION.

From the end of Section 16 at Ravenna the line is continued north-westwardly, passing between lakes Brady and Pippin, reservoirs for canal. Thence the line crosses the Cuyahoga river and passes over to the head waters of Tinker's creek, which are crossed near the east line of Summit county, and thence after passing to the valley of the Brandywine, the line reaches Hudson in Summit county. From Hudson the line descends along the valley of the Brandywine north-westwardly to a point opposite the junction of the Brandywine and Indian run, which, after uniting, run westwardly into the Cuyahoga; and then passes through Macedonia and ascends the valley of Indian run, and passes over to the valley of Tinker's creek, which is crossed at Bedford in Cuyahoga county. Thence the line is continued across Wood creek and to the head of a branch of Mill creek. The valley of this branch of Mill creek is descended to the main Mill creek near Mr. Mark's; thence the valley of Mill creek is followed to Newburgh, where Mill creek bends suddenly to the westward and descends rapidly to the Cuyahoga; and the line of railroad after passing through Newburgh, bears away to the northward descending at the rate of thirty-nine and six-tenths feet per mile along the face of the sloping ground which extends down to the level of the plain upon which Cleveland is situated. The grade strikes the surface of the plain near the crossing

of Kingsbury's run west of the late Judge Kingsbury's residence. Thence the line is continued over an even sandy plain, crossing another branch of Kingsbury's run at the Otis farm, and after crossing Euclid street between Messrs. Weddell and Sterling's houses is continued to the bank of Lake Erie near Mr. Maltby's at the east side of the city of Cleveland. The line then descends westwardly along the bank of the Lake in front of Cleveland at a grade of thirty-nine and six-tenths feet per mile, to a point on the Lake shore and thence runs level to within 125 feet of the pier at the mouth of the Cuyahoga river, and is extended parallel with the pier, affording space for the deposit and shipment of coal and other freight.

About 17 miles from Lake Erie, at the summit between Indian run and the valley of Tinker's creek, the descent towards the Lake becomes more constant, and the grade of the line is soon carried below the general surface of the table lands. Upon the first eight miles from Ravenna towards Hudson the material of excavation is mostly sand and gravel; thence to the crossing of Kingsbury's run, it is generally clay, excepting along Mill creek, where some gravel points occur. From Kingsbury's run to the Lake the whole is generally sandy.

The largest stream crossed by the line, on this Division, is the river Cuyahoga; the only other streams worthy of notice are Brandywine, Indian run, Tinker's creek, Wood creek, Mill creek, and Kingsbury's run: these streams are all tributary to the Cuyahoga. The bridge across the Cuyahoga will have a span of about 120 feet. At Tinker's creek the bed of the stream is considerably below the top of the banks. On each side of the stream the bank is formed of nearly vertical rock bluff; upon these rock bluffs the abutments will be built, making the length of the bridge about 200 feet; across the other streams the bridges will be small. Provision is made in the estimate for protecting the work along the bank of the Lake in front of Cleveland.

Of the line now under contract between Ravenna and Hudson, Section 18 is finished, and on most of the Sections the greater part of the culvert masonry is done, and also a portion of the graduation. On Section 20 the extensive embankment west of the canal reservoirs is nearly finished, and the abutments of the Cuyahoga bridge are three-fourths done. The sandstone used in these abutments is from Franklin. The masonry is built upon a solid flooring of squared timbers which rests upon a bed of compact gravel, $5\frac{1}{2}$ feet below the surface

of low water in the stream. The masonry is of the same description as that on the southern division and has been well done.

The details of the estimated quantities and value of the graduation, masonry and bridging now done, and of the work yet to be done on the line under contract, together with the estimated cost of the graduation, masonry and bridging on the part of this Division not yet under contract are given in table C, below which will be found a statement of the length of the line under contract, and the length of that which is not under contract.

ESTIMATES.

Excepting the calculations for the masonry of some of the larger abutments of bridges, the Estimates are for a single track. The width of the graduation at the level of the road surface will in excavations be not less than nineteen feet; and the embankments will have a width on top of not less than fifteen feet.

The estimated cost of the graduation, masonry and bridging upon the line from Wellsville to the pier at Cleveland, including the work already done, but exclusive of the right of way and damages, engineering and contingencies is as per tables A, B and C, 581,320 dollars and 49 cents.

The graduation is now estimated of greater width than formerly, and the founding of some of the bridge abutments and piers, has been more difficult than was anticipated, causing also an increase of the quantity of masonry. These and other reasons have occasioned the present estimated amounts of graduation, masonry and bridging to be somewhat larger than in former estimates. By the line as located, the necessity of tunneling has been obviated; yet at the Yellow creek summit which is estimated as a through cut, if after excavating in from each end the rock should be found sufficiently sound and firm for a roof, it may be found to be cheaper to pierce through the deep part of the cut, about one thousand feet in length.

SUPERSTRUCTURE.

In estimating the superstructure it has been deemed expedient to provide for a heavier rail than that estimated last year, and the weight of chairs, size of cross ties and quantity of ballasting have been increased accordingly. The superstructure will rest upon a foundation of broken stone or gravel spread evenly over the surface of the road bed for about ten feet in width.

The ground sills will be laid lengthwise of the road, bedded on the broken stone or gravel, and upon them the cross ties will be placed at intervals of two and a half feet, measuring from centre to centre. The space outside of and between the sills, and that between the cross ties and around their ends, will be well packed with broken stone or gravel, making the entire depth of ballasting from twenty to twenty-four inches. The H or inverted T rail will be used, weighing sixty-five pounds per yard.

Table D contains an estimate of the cost of one mile of superstructure with rail as above described, 9212 dollars and 59 cents.

Table E contains a summary of the estimates of cost of the line from Wellsville to Cleveland. The total estimated amount of graduation, masonry, bridging, right of way and damages, superstructure with heavy rail, turnouts, contingencies, &c, is 1,748,201 dollars and 90 cents.

DEPOTS.

At Cleveland it is proposed to have two depots with car houses, repair shops, &c., viz.: one between the crossing of St. Clair street and Mr. Maltby's, for passengers and freight going to or from Cleveland; the other down at the Lake near the pier.

A capacious depot with engine and car houses, repair shops, &c., will be necessary at Wellsville. At Ravenna a depot will be required, and at that or some point towards Freedom a station for repairs will be needed. Smaller depots will be necessary at Hudson, Bedford, Freedom, crossing of Sandy and Beaver canal, Salineville, Big Yellow creek.

Table F contains an estimate of the cost of depot grounds and warehouses, engine and car houses, repair shops, locomotives, passenger and freight cars, &c., amounting to 328,000 dollars.

GRADES.

Tables G H I and J contain the grades between the Pennsylvania and Ohio State line and Cleveland. From the mouth of Nancy's Fork to the Yellow creek summit, four and two-third miles, the gradient used is fifty feet per mile; but on all other parts of the route between the Pennsylvania and Ohio State line and Cleveland, the maximum gradient is less than forty feet per mile.

CURVATURE.

The minimum radius of curvature is twelve hundred feet. Table K contains the amount of curvature, the minimum radius of curvature, and the length of straight and of curved line on each division, &c. The proportion of straight line to curved line for the whole distance from Wellsville to Cleveland is more than three to one; and on the Southern division where most of the curvature occurs, the aggregate length of straight line exceeds that of curved line nearly fifty per cent. The minimum radius being twelve hundred feet, a velocity of 25 miles per hour may be used on any part of the route without detriment to the track, so far as the curvature is concerned; and with the gradients and curvature in use upon this road, a passenger train could safely maintain a speed of 25 to 30 miles per hour from Cleveland to the Sandy summit, within 25 miles of Wellsville, and from Sandy summit to Wellsville from 15 to 20 miles per hour, making the average speed through from Cleveland, 25 miles per hour; so that passengers could reach Wellsville in four hours after leaving the upper Cleveland depot; and with the line completed to Pittsburgh, passengers could reach that city in six hours. The freight and coal trains should move at a speed of 8 to 10 miles per hour; a 20 ton engine drawing a load of about 200 tons of coal.

GENERAL REMARKS.

Stone is abundant generally along the route within reasonable distance of the line, excepting between the Mahoning summit and Lima, and on the four miles next Cleveland. Timber can be had generally along the route within a reasonable distance.

Coal has been found along the valley of Hahn's run, and mines are worked near Rochester in the valley of the Clear Fork of Sandy. I adverted in my former report to the abundant supply of bituminous coal along the vallies of Big Yellow creek and North Fork; two of the veins in those vallies are 4 feet and another vein $6\frac{1}{2}$ feet thick. The coal could be furnished in the cars and transported to Cleveland and sold there profitably at about two dollars and fifty cents per ton.

The city of Cleveland contains about 14000 inhabitants, and possesses one of the most accessible and safe harbors on the Lake. This line of railroad in its course across the Western Reserve, passes through several villages, the most considerable of which are Ravenna and Hudson. The trade of Ravenna is already considerable. Hudson is the

seat of the Western Reserve College, and is also in the centre of the great horse-shoe bend of the Cuyahoga river, upon which there is inexhaustible water power.

Wellsville on the Ohio river has about 1800 inhabitants, and its business and buildings are steadily increasing. The position of that town renders it an important shipping point, and its steamboat landing is one of the best along the Ohio river.

The products of the Western Reserve upon reaching the Ohio river at the nearest point, could be shipped at Wellsville, and the sugar, cotton, &c., of the south-west received in return; while by the terminus at Pittsburgh this road would connect with the great routes to the seaboard.

Thus the advantageous position of this route which presents the shortest practicable line of railway communication between the two grand thoroughfares, Lake Erie and the Ohio river, and which is also upon the direct route from the Lakes to the seaboard, will at all times control the greatest part of the north-west travel and an immense amount of freight.

This road would also be of national importance in time of war; as by its position it would afford between the river and the Lake a safe route, over which government could in any emergency transport ordnance and troops in a few hours.

In conclusion, it affords me pleasure to notice the ability and fidelity with which Messrs. White and Robinson, the principal assistant Engineers, have discharged their duties. Mr. Linton also has rendered very able assistance, particularly by his skill and indefatigable industry as Surveyor, during the surveys and location. The alacrity with which the assistants under the immediate direction of the gentlemen above named, have constantly performed their respective duties, has been highly creditable to them.

All of which is respectfully submitted.

GEO. R. EICHBAUM,

Chief Engineer.

Engineer's Office, Ravenna, Ohio, }
December 9, 1848. }

**ESTIMATE of the Cost of Graduation, Masonry and
to Station 707 near the
WORK**

No. of Section.	Grubbing.		Excavation and Embankment.		Excava. of Channel.		Arch'd Culv's.		Rectan. Culv.		BRIDGE.	
											Masonry.	
	Dol.	Dolls.	Cubic Yards.	Cub. yds.	Per.	Perches.	Perches.	Perches.	Perches.	Perches.	Perches.	Perches.
	Done.	To be done.	Done.	To be done.	Done.	Done.	To be done.	Done.	To be done.	Done.	To be done.	To be done.
1	42	8	3650	627								
2	102		49667	6397				890				
3	75		65075	11294				1096				
4	12	3	7004	26001				438	50			3000
5	60	40	16046	14954				18	162			2200
6	25		43609	1061	9000			234		465	85	
7	65	10	30661	7946				90		875	108	
8		10	8323	8275				85		441		
9		25		15693					50			700
10		25		12762					246			
11		50		16132					181			250
12	30	40	9046	28884	2500				75			650
13		30		21184					70			400
14		50		14000					100			400
15	50	20	20050	23845					350			150
16	40	30	9767	17821		360			200			
17	45	25	10912	23197		612			33			
18	60	10	28213	1187				507				

WORK NOT YET

19		20	155000		780		287		
20			24200				99		370
21		50	33400				439		
22		20	37000				872		
23		46	104500				1144		
24		32	33600				685		
25		96	37400				300		
26		85	17400				150		
27		90	26960				50		460
28		90	42800				100		260

Length of line under contract,
do do not under contract,

18 miles and 2960 feet.
13 " " 2060 "

Total length,

31 miles and 5020 feet.



**Bridging upon the First or Southern Division from Wellsville
mouth of Hahn's run.**

UNDER CONTRACT.

ING.		Rip Rap.		Am't done.		Am't to be done.		REMARKS.
Superstrucs.		and dam						
To be done.		Perches.						
No.	Total length in feet.	Done.	To be done.	Dollars.	Cents.	Dollars.	Cents.	
				465	24			
		423		6545	27	781	44	[low Creek.
				15203	96	2138	68	Passes mouth Big Yel-
1	160	11	189	1240	46	15460	56	Cross Big Yellow Cr'k.
1	160	16		1931	34	9840	81	Cross Big Yellow Cr'k.
1	130	3622	50	9353	21	1101	15	Passes mouth N'rth F'k.
3	370	470	80	5899	23	3429	25	Passes McDonald's.
2	260	118	82	2397	29	2933	70	Passes Jackman's.
2	260					6242	00	do Cope's mill.
						2009	76	
1	130					4486	00	
2	220		200	1547	37	15625	04	Passes Ogle's bend.
2	220					7970	00	Passes Croxson.
2	200					5577	00	Endsopp. Salineville.
1	60			2680		5529	84	Ascends Nancy's Fork.
				2473	15	3698	66	Cross Rose's run.
				3712	76	2477	61	Passes Dobson's mill.
				5958	01	252	07	Passing McHugh's.
Total work done,				59407	29			

UNDER CONTRACT.

1	60				56356	75	Over Yel. C'k summit.
					5017	75	
					5231	25	
					6900	50	
					37730	00	Over Sandy Summit.
					7011	00	Ends in Clearfork valley.
					4612	00	
					2378	50	Passes Lynchburgh.
1	60				4321	10	Passes Rochester.
1	60				7681	50	Crosses Sandy & Beaver
							canal, ends near mouth
					226793	92	of Hahn's run.
					59407	29	
Total Graduation,							
Masonry and Bridging,					\$286201	21	

IB

**ESTIMATE of the Cost of Graduation, Masonry and
from Station 707 near the mouth
WORK NOT YET**

No. of Section.	Grubbing.		Excavation and Embankment.		Arched Culverts.	Rectangular Culverts.	
	Dolls.	Dolls.	Cub.yds.	Cub.yds.	Perches.	Perches.	Perches.
	Done.	To bedone.	Done.	To bedone.	To bedone.	Done.	To bedone.
29		216		12041			61
30		88		13038			140
31		236		13482			249
32		344		11588			46
33		208		15873			169
34		192		41100			278
35		272		43029			185
36		224		57385	314		311

WORK UNDER

1	160	40	140	10924		128	156
2	150	25	3330	4503		130	108
3	185	15	4810	6730	314	91	40
4	100		27887			90	
5	135	15	3890	9400		190	68
6	55	5	4390	34289		35	57
7	180	20	470	9340		96	67
8		50		20155	371		48
9		120		13541			226
10	500	100	140	10778		73	116
11		165		25649			249
12		160		27404			375
13		60		15269			243
14	140	100	3120	22905		155	43
15	250		2120	5484		141	20
16	25	15	7800	17615		142	9

Length of line under contract 20 miles 600 feet.
do do not yet under contract 10 miles 2900 feet.

Total length 30 miles 3500 feet.



Bridging, upon the Middle Division, extending
of Hahn's Run, to Ravenna.

UNDER CONTRACT.

BRIDGING.				Amount Done.		Amount to be done.		REMARKS.
Masonry.		Superstruct's.						
1st Class		Number.	Total length in Feet.					
Per.	Per.			To be done.		Dollars.	Cents.	
Done.	To be done.							
	300	1	55			2869 41	Along Hahn's run.	
	300	1	55			3327 40		
	175	1	50			3203 43	Crosses Canton State	
	600	2	100			4694 67	road.	
						2822 01	Ends near Thomas road.	
	600	1	60			10238 99	Ends near Mahon. Sum.	
						8809 84	Passes Mahoning Sum't.	
	2000	1	50			20693 75	Ends near Teagarden's.	

CONTRACT.

				462	75	1666	12	
				842	10	852	66	Freedom.
				933	50	2219	75	
	2000	1	50	3054	08	9364	82	Crosses Beech Creek.
				1062	67	1157	25	
				1106	80	13525	05	Passes Lima.
				439	70	1341	60	[road.
						4499	10	Crosses Atwater E & W
						2272	00	
				664	00	1405	80	
						3848	02	Crosses Barrel run.
						4566	87	[Breakneck.
						2563	27	Passes head waters of
				909	55	3004	63	
				821	33	663	53	
	500	1	50	1277	00	5172	25	Crosses Penn. and Ohio
								canal, ends at Ravenna.
				11623	59	115092	22	
						11623	59	
				Add work done,				
				Total Graduation,				
				Masonry and Bridging,		\$126,715	81	



**ESTIMATE of the Cost of Graduation, Masonry and
WORK UNDER**

No. of Section.	Grubbing.		Excavation and Embankment.		Arched Culverts.	Rectangular Culverts.		BRIDGE-Masonry.	
	Dolls.		C. yds.		Perches.	Per.		1st Class.	
	To be done.		To be done.		To be done.	To be done.		To be done.	
	Done.	To be done.	Done.	To be done.	To be done.	Done.	To be done.	Done.	To be done.
17		200		29339			292		465
18	90		12960			109			
19		160		21159			449		
20	20	5	19751	12957		285		660	118
21	10	15	3940	12125		254	16		
22		270		24993			245		
23		20		20740			374		
24	25	95	2800	8174		132	113		
25		50		4831		110	94		
26	10	65		7463		298			

WORK NOT YET

27		120		20593			116		1200
28		96		6491			249		
29		200		22250			408		
30		144		11813	500		174		
31		152		5956			193		
32		232		30370			138		600
33		280		8052			227		
34		336		8305			194		
35		224		5694			106		
36		136		57483			252		4000
37		72		18348			491		
38		160		23558	1000		25		
39		192		18390			414		
40		20		47975			40		1600
41		30		12790			68		800
42				10065			172		
43		96		30160			363		
44		152		42204	600		95		
45		102		24341			325		
46		108		7360	/		70		
47		48		8518			64		
48				50000			652		

Length of line under contract 11 miles and 4120 feet.

Length of line not yet, under contract including distance between upper and Lake depots 25 " " 2600 "

Total length to pier at the mouth of Cuyahoga, 37 miles and 1440 feet.

**Bridging, upon the Northern Division, from Cleveland to Ravenna.
CONTRACT.**

ING.		Piles & timber along Lake.		Amount Done.		Amount to be done.		REMARKS.
Superstruct's. To be done.								
Number.	Total length in Feet.	Number of Piles.	Cubic Feet Timber.	Dollars.	Cents.	Dollars.	Cents.	
1	50			1805	75	7233	06	Crosses Cuy. feeder.
						3419	78	Passes Brady & Pippin
1	130			5065	82	4156	31	reservoirs.
				1142	16	1319	43	Crosses Cuy. river.
						5088	27	
						4389	12	
				660	00	1825	22	
				275	00	913	02	
				755	00	1034	19	Ends at Hudson.
Total work done				\$9703 73				

UNDER CONTRACT.

1	60					7204	11	Along Brandywine.
						1330	71	
						4134	23	
						3664	77	[wine and Indian run.
						1250	00	Passes junct. Brandy-
1	25					8078	59	Through Macedonia.
						1921	21	
						1816	77	
						1315	98	
1	200					26018	77	{ Cross Tinker's cr'k
						3172	84	{ ends at Bedford.
						7237	73	Crosses Wood creek.
						3142	08	
2	92					11327	01	Descending Mill cr'k.
2	94					4885	55	
						1914	24	Through Newburgh.
						5357	25	
						8974	73	Crosses Kingsbury's
						3343	68	run, ends on plain.
						863	72	Ends near Euclid st.
						1217	36	Cleveland.
		4000	42000			20750	00	Ends at Pier.
						\$158699 74		
Add work done						9703 73		

Total Graduation, Masonry and Bridging, \$168403 47



ESTIMATE

OF THE COST OF ONE MILE OF SUPERSTRUCTURE,

With H or inverted T Rail, weighing 65 Pounds per Yard.

Ballasting or Graveling for foundation,	- -	\$700 00
10560 feet lin. of ground sills, 4 x 12 in. at 4 cents per foot,		422 40
2112 feet lin. Cross ties, each 8 feet 6 in. long, 7 x 8 in. at		
16 cents per tie,	- - - - -	337 92
4224 Spikes for cross ties, 1050 lbs. at 6 cents per lb.		63 00
Labor, laying timber,	- - - - -	260 00
103 tons of iron, (H or inverted T rail, weighing 65 lbs.		
per yard,) at \$63 per ton,	- - - - -	6489 00
590 Chairs, each 15 lbs.=8850 lbs. at 3½ cts. per lb.		309 75
1180 Bolts for fastening chairs, at 10 cents,	- -	118 00
7268 Spikes for rails=4542 lbs. at 6 cents per lb.	-	272 52
Labor, laying iron, &c.	- - - - -	240 00
Total,	- -	<u>\$9212 59</u>





SUMMARY ESTIMATES OF COST.

Graduation, Masonry and Bridging of 1st or Southern Division, - - - - -	\$286,201 21
Graduation, Masonry and Bridging of Mid- dle Division, - - - - -	126,715 81
Graduation, Masonry and Bridging of Nor- thern Division, including protection along Lake shore, - - - - -	168,403 47
Total Graduation, Masonry and Bridging,	581,320 49
98 14-100 miles of superstructure with H or inverted T rail, weighing 65 lbs. per yard, at \$9212 59-100 per mile, - - - -	904,123 58
1 7-10 mile do. between passage depot at Cleveland and pier - - - - -	15,661 40
	919,784 98
Right of way and land damages, - - -	30,000 00
200 Cattle guards, at \$40 each, - - -	8,000 00
6 miles of Turn-outs, at \$12000 per mile,	72,000 00
90 Road crossings, at \$40 each, and 400 farm crossings at \$10 each, - - - -	7,600 00
	1,618,705 47
Add for contingencies, engineering and superin- tendence, 8 per cent. - - - - -	129,496 43
From Wellsville to the Lake depot at Cleveland, total estimated cost of construction, - - - - -	\$1,748,201 90



Distance from Pittsburgh to State line, per United States survey, - - - -	39 miles, 1620 feet
" " State line to Wellsville, - - - -	8 " 360 "
" " Wellsville to the passenger depot at Cleveland, per line as located, 98	" 960 "
" " Passenger depot to the pier, 1	" 3720 "
Total distance from Pittsburgh to pier at mouth of Cuyahoga at Cleveland, - - - -	147 1380



ESTIMATE OF COST

Of Depots, Engine and Car Houses, Repair Shops, Locomotives, &c.

Depots at Cleveland, Ravenna and Wellsville,	\$23000 00
10 Smaller depots, - - - - -	15000 00
6 Stopping places, each \$250, - - - - -	1500 00
15 Watering stations and fuel sheds, each \$300, - - - - -	4500 00
3 Engine houses, with car houses, - - - - -	30000 00
2 Repair shops, with turn tables, &c., - - - - -	25000 00
12 Locomotives and tenders, - - - - -	90000 00
24 Passenger cars, - - - - -	36000 00
120 Freight cars - - - - -	60000 00
120 do. do. - - - - -	40000 00
Mile boards and signs for crossings, - - - - -	3000 00
Total, - - - - -	\$328,000 00

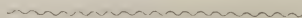


TABLE OF GRADES

On the portion of the Cleveland and Pittsburgh Rail Road,

Extending from the P. and O. State line to Wellsville.

From Station.	To Station.	Distance in Ft.	Grade per 100 Feet.	Grade per mile in Feet.	No. of Feet of Ascent.	No. of Feet of Descent.	Height of Grade line in Feet.*	REMARKS.
	27						53.75	
27	54	2700	0.75	39.60	20.25		74.00	
54	84	3000	Level.				74.00	
84	106	2200	0.70	36.96		15.40	58.60	
106	128	2200	Level.				58.60	
128	148	2000	0.70	36.96		14.00	44.60	
148	208	6000	Level.				44.60	
208	233	2500	0.70	36.96	17.50		62.10	
233	235	200	Level.				62.10	
235	261	2600	0.75	39.60		19.50	42.60	
261	334	7300	Level.				42.60	
334	352	1800	0.50	26.40	9.00		51.60	
352	356	400	Level.				51.60	
356	379	2300	0.50	26.40		11.50	40.10	
379	442	6300	Level.				40.10	

*Above surface of low water in Ohio river at Wellsville.



TABLE OF GRADES

**On the Southern Division of the Cleveland and Pittsburgh Rail Road,
Extending from Station O. in Wellsville to Station 707
Near the mouth of Hahn's Run.**

From Station.	To Station.	Distance in Ft.	Grade per 100 Feet.	Grade per Mile in Feet.	Ascent in Feet.	Descent in Feet.	Height of Grade line in Feet.*	REMARKS.
0	10	1000	Level.				40.00	*Above surface of low water in Ohio river at Wellsville.
10	30	2000	0.50	26.40	10.00		50.00	
30	36	600	Level.				50.00	
36	60	2400	0.44	23.23		10.60	39.40	
60	92	3200	Level.				39.40	
92	108	1600	0.40	21.12	6.40		45.80	
108	132	2400	Level.				45.80	
132	138	600	0.75	39.60	4.50		50.30	
138	141	300	Level.				50.30	
141	153	1200	0.71	37.49		8.60	41.70	
153	155	200	Level.				41.70	
155	172	1700	0.71	37.49	12.07		53.80	
172	174	200	Level.				53.80	
174	198	2400	0.60	31.68		14.40	39.40	
198	320	12200	Level.				39.40	
320	343	2300	0.45	23.76	10.35		49.75	
343	362	1900	0.43	22.70	8.17		57.92	
362	383	2100	0.50	25.40	10.50		68.42	
383	401	1800	0.14	7.39	2.52		70.94	
401	422	2100	0.39	20.59	8.19		79.15	
422	426	400	Level.				79.15	
426	438	1200	0.25	13.20	3.00		82.15	
438	500	6200	0.52	27.45	32.24		114.39	
500	563	6300	0.20	10.56	12.60		126.99	
563	590	2700	0.45	23.76	12.16		139.15	
590	610	2000	0.70	36.95	14.00		153.15	
610	631	2100	0.20	10.56	4.20		157.35	
631	685	5400	0.75	39.60	40.50		197.85	
685	697	1200	0.42	22.17	5.04		202.89	
697	704	700	Level.				202.89	
704	742	3800	0.50	26.40	19.00		221.89	Yellow creek summit.
742	766	2400	0.34	17.95	8.16		230.05	
766	35	24900	0.95	50.00	236.55		466.60	
35	37	200	Level.				466.60	
37	124	8700	0.75	39.60		65.25	401.35	
124	127	300	Level.				401.35	
127	190	6300	0.75	39.60	47.25		448.60	
190	196	600	Level.				448.60	
196	313	11700	0.75	39.60	87.75		536.35	
313	315	200	Level.				536.35	
315	405	9000	0.75	39.60		67.50	468.85	Sandy summit.

From Station.	To Station.	Distance in Ft.	Grade per 100 Feet.	Grade per mile in Feet.	Ascent in Feet.	Descent in Ft.	Height of Grade line in Feet.*	REMARKS.
405	430	2500	0.20	10,56		5,00	463,85	*Above surface of low water at Wells-ville.
430	442	1200	Level.				463,85	
442	470	2800	0.20	10,56		5,60	458,25	
470	500	3000	Level.				458,25	
500	512	1200	0,50	26,40		6,00	452,25	
512	544	3200	0,10	5,28		3,20	449,05	Crossing of Sandy and Beaver Canal, [Hahn's run. Near the mouth of
544	564	2000	0,25	13,20		5,00	444,05	
564	574	1000	Level.				444,05	
574	594	2000	0,15	7,92		3,00	441,05	
594	619	2500	Level.				441,05	
619	623	400	0,50	26,40	2,00		443,05	
623	637	1400	Level.				443,05	
637	642	500	0,40	21,12	2,00		445,05	
642	651	900	Level.				445,05	
651	668	1700	0,75	39,60		12,75	432,30	
668	682	1400	Level.				432,30	
682	692	1000	0,50	26,40		5,00	427,30	
692	707	1500	Level.				427,30	



TABLE OF GRADES

On the Middle Division of the Cleveland and Pittsburgh Rail Road,
Extending from Station 707, at the mouth of Hahn's Run,

TO STATION 1062 AT RAVENNA.

From Station.	To Station.	Distance in Ft.	Grade pr 100 Ft.	Grade pr Mile in Feet.	Ascent in Feet.	Descent in Feet.	Height of grade line in Feet.*	REMARKS.
707	736	2900	Level.				427.30	
736	746	1000	0.10	5.28	1,00		428.30	*Above surface of low water in Ohio riv- er at Wellsville.
746	766	2000	0.30	15.84	6,00		434.30	
766	792	2600	Level.				434.30	
792	804	1200	0.20	10.56	2,40		436.70	
804	817	1300	0.50	26.40	6,50		443.20	
817	840	2300	Level.				443.20	
840	884	4400	0.25	13.20	11,00		454.20	
884	900	1600	Level.				454.20	
900	922	2200	0.30	15.84	6,60		460.80	
922	944	2200	0.20	10.56	4,40		465.20	
944	955	1100	0.70	36.96	7,70		472.90	
955	990	3500	0.16	8.45	5.60		478.50	
990	1087	9700	0.75	39,60	72,75		551.25	
1087	1113	2600	Level.				551.25	Mahoning summit.
1113	1204	9100	0.75	39,60		68,25	483.00	
1204	1209	500	Level.				483.00	
1209	4	5900	0.75	39,60		44,25	438.75	
4	16	1200	0.20	10,56		2,40	436.30	
16	28	1200	0.50	26.40		6,00	430.30	
28	40	1200	Level.				430.30	
40	59	1900	0.50	26,40	9,50		439.80	
59	80	2100	Level.				439.80	
80	110	3000	0.75	39,60		22,50	417.30	
110	124	1400	Level.				417.30	
124	140	1600	0.50	26,40		8,00	409.30	
140	158	1800	0.75	39,60		13,50	395.80	
158	161	300	Level.				395.80	
161	173	1200	0.75	39.60	9,00		404.80	
173	199	2600	0.50	26,40	13,00		417.80	
199	201	200	Level.				417.80	
201	232	3100	0.75	39,60		23,25	394.55	
232	235	300	Level.				394.55	
235	255	2000	0.75	39,60	15,00		409.55	
255	301	4600	Level.				409.55	
301	407	10600	0.75	39,60	79,50		489.05	
407	411	400	Level				489.05	
411	465	5400	0.75	39,60		40,50	448.55	
465	471	600	Level.				448.55	
471	519	4800	0.75	39,60	36,00		484.55	
519	530	1100	Level.				484.55	
530	540	1000	0.50	26,40		5,00	479.55	

From Station,	To Station,	Distance in feet,	Grade per 100 Feet,	Grade per mile, in Feet.	Ascent in Feet,	Descent in Feet,	Height of grade line in Feet,*	REMARKS.
540	543	300	Level,				479.55	*Above surface of low water in Ohio river at Wellsville.
543	577	3400	0.75	39.60	25.50		505.05	
577	590	1300	0.50	26.40	6.50		511.55	
590	623	3600	0.44	23.23	15.84		527.39	
626	630	400	Level,				529.39	
630	654	2400	0.30	15.85		7.20	520.19	
654	711	5700	0.75	39.60		42.75	477.44	
711	713	200	Level,				477.44	
713	730	1750	0.75	39.60	12.75		490.19	
730	733	300	Level,				490.19	
733	754	2100	0.75	39.60		15.75	474.44	
754	757	300	Level,				474.44	
757	791	3400	0.75	39.60	25.50		409.94	
791	795	400	Level,				499.94	
795	830	3500	0.75	39.60		26.25	473.69	
830	849	1900	Level,				473.69	
849	877	2800	0.75	39.60		21.00	452.69	
877	919	4200	Level,				452.69	
919	927	800	0.50	26.40	4.00		456.69	
927	976	4900	Level,				456.69	
976	1007	3100	0.75	39.60		23.25	433.44	
1007	1024	1700	Level,				433.44	
1024	1044	2000	0.75	39.60	15.00		443.44	Ravenna.
1044	1056	1200	0.50	26.40	6.00		454.44	
1056	1060	400	Level,				454.44	
1060	1062	200	0.75	39.60		1.50	452.94	



TABLE OF GRADES

On the Northern Division of the Cleveland and Pittsburgh Rail Road,

Extending from Station 1062 at Ravenna,

To Station 1346 at the Pier at Cleveland.

From Station.	To Station.	Distance in Ft.	Grade per 100 Feet.	Grade per Mile in Feet.	Ascent in Feet.	Descent in Ft.	Height of grade line in Feet.*	REMARKS.
1062							452.94	
1062	1079	1700	0.75	39.60		12.75	440.19	*Above surface of low water in Ohio river at Wellsville.
1079	1099	2000	Level.				440.19	
1099	1107	800	0.50	26.40		4.00	436.19	
1107	1120	1300	Level.				436.19	
1120	1131	1100	0.75	39.60	8.25		444.44	
1131	1134	300	Level.				444.44	
1134	1160	2600	0.70	39.96		18.20	426.24	
1160	1165	500	Level.				426.24	
1165	1177	1200	0.75	39.60	9.00		435.24	
1177	1200	2300	Level.				435.24	
1200	1215	1500	0.20	10.56		3.00	432.24	
1215	1220	500	Level.				432.24	
1220	1235	1500	0.75	39.60	11.25		443.49	
1235	1247	1200	0.16	8.45	1.92		445.41	
1247	1310	6300	0.75	39.60		47.25	398.16	
1310	1331	2100	Level.				398.16	
1331	1389	5800	0.75	39.60	43.50		441.66	
1389	1416	2700	Level.				441.66	
1416	1458	4200	0.75	39.60		31.50	410.16	
1458	1467	900	Level.				410.16	
1467	1489	2200	0.75	39.60	16.50		426.66	
1489	1519	3000	0.60	31.68	18.00		444.66	
1519	1525	600	Level.				444.66	
1525	1548	2300	0.75	39.60	17.25		461.91	
1548	1557	900	Level.				461.91	
1557	1570.86	1386	0.40	21.12		5.55	456.36	
1570.86	1575.86	500	Level.				456.36	
1575.86	1583.86	800	0.50	26.40	4.00		460.36	
1583.86	1584.86	100	0.20	10.56	.20		460.56	
1584.86	1600	1514	Level.				460.56	
1600	1619	1900	0.10	5.28		1.90	458.66	
1619	1635	1600	0.20	10.56		3.20	455.46	
1635	1681.53	4653	0.75	39.60		34.89	420.58	
1681.53	1684	247	Level.				420.58	Hudson.
1684	27	2900	0.75	39.60		21.75	398.83	
27	44	1700	Level.				398.83	
44	61	1700	0.75	39.60		12.75	386.08	
61	63	200	Level.				386.08	
63	84	2100	0.70	36.96	14.70		400.78	
84	118	3400	Level.				400.78	
118	140	2200	0.75	39.60		16.50	384.28	

From Station.	To Station.	Distance in Ft.	Grade per 100 Feet.	Grade per mile. in Feet.	Ascent in Feet.	Descent in Ft.	Height of grade line in Feet.*	REMARKS.
140	147	700	Level.				384.28	
147	164	1700	0.75	39,60	12.75		397.03	*Above surface of low water in the Ohio river at Wellsville.
164	165	200	Level.				397.03	
166	204	3300	0.75	39,60		28.50	363.53	
204	210	600	Level.				363.53	
210	217	700	0.70	36,96		4.90	363.63	
217	231	1400	Level.				363.63	
231	257	2600	0.66	34,85		17.16	346.47	
257	284	2700	0.28	14,78		7.56	338.91	
284	293	900	Level.				338.91	
293	304	1100	0.50	26,40	5.50		344.41	
304	331	2700	Level.				344.41	
331	397	6300	0.75	39,60	49.50		393.91	
397	400	300	Level.				393.91	
400	418	1800	0.50	26,40		9.00	384.91	
418	423	500	Level.				384.91	
423	443	2000	0.75	39,60	15.00		399.91	
443	445	200	Level.				399.91	
445	470	2500	0.33	17,42		8.25	391.66	
470	506	3600	0.75	39,60		27.00	364.66	
506	521	1500	0.33	17,42		4.95	359.71	
521	619	9800	0.75	39,60		73.50	286.21	Bedford.
619	621	200	Level.				286.21	
621	629	800	0.75	39,60	6.00		292.21	
629	647	1800	Level.				292.21	
647	678	3100	0.75	39,60		23.25	268.96	
678	680	200	Level.				268.96	
680	698	1800	0.75	39,60	13.50		282.46	
698	709	1100	Level.				282.46	
709	860	15100	0.75	39,60		113.25	169.21	
860	904	4400	0.50	26,40		22.00	147.21	
904	924	2000	0.60	31,68		12.00	135.21	
924	927	300	Level.				135.21	
927	944	1700	0.75	39,60	12.75		147.96	
944	948	400	Level.				147.96	
948	1102	15400	0.75	39,60		115.50	32.46	
1102	1104	200	Level.				32.46	
1104	1117	1300	0.50	26,40	6.50		38.96	
1117	1119	200	Level.				38.96	
1119	1137	1800	0.44	23,23		7.92	31.04	
1137	1156	1900	0.10	5,28		1.90	29.14	
1156	1206	5000	0.25	13,20		12.50	16.64	
1206	1252	4600	0.75	39,60		34.50	+17.86	Upper depot at Clev'Ind.
1252	1256	400	Level.				+17.86	
1256	1324	6800	0.75	39,60		51.00	+68.86	Lake depot
1324	1346	2200	Level.				+68.86	
							+76.00	Surface of Lake Erie.

† Below the surface of low water in the Ohio River at Wellsville.



TABLE

Of the number of Degrees of Curvature, Minimum Radius of Curvature, length of Straight Line, and length of Curved Line, upon each Division of the Cleveland and Pittsburgh Railroad, between Wellsville and Cleveland.

	Curvature.		Length of Straight Line.	Length of curv'd line.	Total.
	No. of deg.	Minimum Radius Ft.	Miles.	Miles.	Miles.
Southern division from Wellsville to mouth of Hahn's run.	2408	1200	18.56	13.39	31.95
Middle division from mouth of Hahn's run to Ravenna.	420	1432	26.97	3.69	30.66
Northern division from Ravenna to Cleve- land.	818	1200	30.03	5.53	35.56
Total. - - -	3646°		75.56	22.61	98.17

ERRATA.

For "May," page 4, line 15, read "July."

" "1848," page 16, line 25, read "1847."

AN ACT

To incorporate the Cleveland and Pittsburgh Rail Road Company.

§ 1. *Be it enacted by the General Assembly of the State of Ohio,* That Van R. Humphrey, Heman Oviatt, D. B. Bostwick, Darius Lyman, and Joseph De Wolf, of Portage County; Samuel Starkweather, Charles Whittlesey, and John W. Willey, of Cuyahoga County; Robert Forbes, Isaac Wilson, James Robertson, John Wallis, George McCook, and John Patrick, of Columbiana County, be, and they are hereby appointed commissioners, under the direction of a majority, of whom subscriptions may be received to the capital stock of the Cleveland and Pittsburgh Railroad Company, hereby incorporated; and they, or a majority of them, may cause books to be opened in the counties of Cuyahoga, Portage and Columbiana, and at such other time and place as they may direct, for the purpose of receiving subscriptions to the capital stock of said company, after having given thirty days' notice of the time and place of opening the same; and that upon the first opening of the books they shall be kept open for at least ten days in succession, from ten o'clock A. M. until two o'clock P. M.; and if, at the expiration of that period, such a subscription to the capital stock of said company as is necessary to its incorporation shall not have been obtained, then said commissioners, or a majority of them, may cause said books to be open from time to time after the expiration of said ten days, and for the space of three years thereafter; and if any of the said commissioners shall die, resign, or refuse to act, during the continuance of the duties devolved upon them by this act, another or others may be appointed in his or their stead, by the remaining commissioners or a majority of them.

§ 2. That the capital stock of the Cleveland and Pittsburgh Railroad Company, shall be fifteen hundred thousand dollars, and shall be divided into shares of fifty dollars each; and it shall and may be lawful for said corporation to commence the construction of said railroad or way, and enjoy all the powers and privileges conferred by this act, (as) soon (as) the sum of one hundred thousand dollars shall be subscribed to said stock.

§ 3. That all persons who shall become stockholders pursuant to

this act, shall be, and they are hereby erected a body corporate, and shall be and remain a corporation for ever, under the name of "the Cleveland and Pittsburgh Railroad Company," and by that name shall be capable in law of purchasing, holding, selling, leasing and conveying estates, real, personal, and mixed, so far as the same shall be necessary for the purposes hereinafter mentioned, and no further; and shall have perpetual succession; and by said corporate name may contract and be contracted with, sue and be sued, and may have and use a common seal, which they shall have power to alter and renew at their pleasure; and shall have, enjoy, and may exercise all the powers, rights, and privileges, which corporate bodies may lawfully do, for the purposes mentioned in this act.

§ 4. That upon all subscriptions there shall be paid, at the time of subscribing, to the said commissioners, or their agents appointed to receive such subscriptions, the sum of five dollars on every share subscribed, and the residue thereof shall be paid in such instalments and at such times as may be required by the president and directors of said company: *Provided* no payment other than the first shall be demanded until at least thirty days' notice of such demand shall have been given by the president and directors in some newspaper of general circulation in the State of Ohio; and if any stockholder shall fail or neglect to pay any instalment or part of said subscription thus demanded, for the space of sixty days next after the time the same shall be due and payable, the said president and directors, upon giving at least thirty days' previous notice thereof, in manner aforesaid, may, and they are hereby authorized to sell, at public vendue, so many of the shares of the said delinquent stockholder or stockholders as shall be necessary to pay such instalment and the expenses of advertising and sale, and transfer the shares so sold to the purchasers; and the residue of the money arising from such sale, after paying such instalment and expense, shall be paid to said stockholders on demand.

§ 5. That, at the expiration of ten days, for which the books are first opened, if seven hundred and fifty shares of said capital stock shall have been subscribed, or if not, as soon thereafter as the same shall be subscribed, if within three years after the first opening of the books, the said commissioners, or a majority of them, shall call a general meeting of the stockholders, at such time and place as they shall appoint, and shall give at least sixty days' previous notice thereof: and at such meeting the said commissioners shall lay the subscription books

before the stockholders then and there present; and thereupon the said stockholders, or a majority of them, shall elect twelve directors by ballot, a majority of whom shall be competent to manage the affairs of said company; they shall have the power of electing a president of said company, either from among said directors or others, and of allowing him such compensation as they may deem proper; and in said election, and on all other occasions wherein a vote of the stockholders of said company is to be taken, each stockholder shall be allowed one vote for every share owned by him or her; and every stockholder may depute any other person to vote and act for him or her, as his or their proxy; and the commissioners aforesaid, or any three of them, shall be judges of the first election of said directors.

§ 6. That, to continue the succession of the president and directors of said company, twelve directors shall be chosen annually, on the third Monday in October, in every year, in the town of Ravenna, in the county of Portage, or at such other place as a majority of the directors shall appoint; and if any vacancy shall occur by death, resignation, or otherwise, of any president or director, before the year for which he was elected has expired, a person to fill such vacant place, for the residue of the year, may be appointed by the president and directors of said company or (a) majority of them; and that the president and directors of said company shall hold and exercise their offices until a new election of president and directors; and that elections which are by this act, or the by-laws of the company, to be made on a particular day, or at a particular time, if not made on such a day or time, may be made at any time within thirty days thereafter,

§ 7. That a general meeting of the stockholders shall be held annually, at the time and place appointed for the election of president and directors of said company; that meetings may be called at any time during the interval between the said annual meetings, by the president and directors, or a majority of them, or by the stockholders owning at least one-fourth of the stock subscribed, upon giving at least thirty days' public notice of the time and place of holding the same; and when any such meetings are called by the stockholders, such notice shall specify the particular object of the call; and if, at any such called meeting, a majority in value of the stockholders of said company are not present, in person or by proxy, such meeting shall be adjourned from day to day, without transacting any business, for any time not exceeding three days; and if, within said three days, stockholders hold-

ing a majority in value of the stock subscribed, do not thus attend, such meeting shall be dissolved.

§ 8. That at all the regular meetings of the stockholders of said company, it shall be the duty of the president and directors in office for the previous year, to exhibit a clear and distinct statement of the affairs of the company; that at any called meeting of the stockholders, a majority of those present, in person or by proxy, may require similar statements from the president and directors, whose duty it shall be to furnish them when thus required; and that at all general meetings of the stockholders, a majority in value of all the stockholders of said company may remove from office any president or any of the directors of said company, and may appoint officers in their stead,

§ 9. That any president and director of said company, before he acts as such, shall swear or affirm, as the case may be, that he will well and truly discharge the duties of his said office to the best of his skill and judgment,

§ 10. That the said president and directors, or a majority of them, may appoint all such officers, engineers, agents, or servants whatsoever, as they may deem necessary for the transaction of the business of the company, and may remove any of them at their pleasure; that they, or a majority of them, shall have the power to determine by contract the compensation of all engineers, officers, agents, or servants, in the employ of said company; and to determine by their by-laws the manner of adjusting and settling all accounts against the said company: and also, the manner and evidence of transfers of stock in said company; and they, or a majority of them, shall have the power to pass all by-laws which they may deem necessary or proper for exercising all the powers vested in the company hereby incorporated, and for carrying the objects of this act into effect: *Provided only*, That such by-laws shall not be contrary to the laws of this State or of the United States.

§ 11. That the said corporation shall be, and they are hereby vested with the right to construct a double or single railroad or way, from Cleveland, in the county of Cuyahoga, on the most direct and least expensive route, to some point in the direction of Pittsburgh, on the State line between Ohio and Pennsylvania, or on the Ohio river; to transport, take and carry property and persons upon the same, by the power and force of steam, of animals, or of any mechanical or other power, or of any combination of them, which the said corporation may choose to employ.

§ 12. That the president and directors of said company shall be and they are hereby invested with all rights and powers necessary for the location, construction, and repair of said road, not exceeding one hundred feet wide, with as many sets of tracks as the said president and directors may deem necessary; and they may cause to be made, contract with others for making the said railroad or any part of it; and they, or their agents, or those with whom they may contract for making any part of the same, may enter upon and use and excavate any land which may be wanted for the site of said road, or for any other purpose necessary and useful in the construction, or in the repair of said road or its works, and that they may build bridges, may fix scales and weights, may lay rails, may take and use any earth, timber, gravel, stone, or other materials which may be wanted for the construction or repair of any part of said road, or any of its works; and may make and construct all works whatsoever which may be necessary in the construction or repair of said road.

§ 13. That the president and directors of said company, or a majority of them, or any person authorized by them, or a majority of them, may agree with the owner or owners of any land, earth, timber, gravel or stone, or other materials, or any improvements which may be wanted for the construction or repair of said road, or any of their works, for the purchase, or use, or occupation of the same: and if they cannot agree, or if the owner or owners, or any of them, be a married woman, insane person, or idiot, or out of the county in which the property wanted may lie when such land and materials may be wanted, application may be made to any justice of the peace of such county, who shall thereupon issue his warrant, under his hand and seal, directed to the sheriff of said county, or to some disinterested person, if the sheriff shall be interested, requiring him to summon a jury of twelve men, inhabitants of said county, not related, or in anywise interested, to meet on the land, or near to the other property or materials to be valued, on a day named in said warrant, not less than ten or more than twenty days after the issuing of the same; and if, at the said time and place, any of said persons summoned do not attend, said sheriff or summoner shall immediately summon as many persons as may be necessary, with the persons in attendance, to furnish a panel of twelve jurors in attendance; and from them each party, or its, his, her, or their agents, the sheriff or summoner, for him, her, it or them, may strike off three jurors, and the remaining six shall act as a jury of inquest of damages;

and before they act as such, the said summoner or sheriff shall administer to each of them an oath or affirmation, as the case may be, that they will faithfully and impartially value the damages which the owner or owners will sustain by use or occupation of the same, required by said company; and the jury estimating the damages, if for the ground occupied by said road, shall take into the estimate benefits resulting to said owner or owners, by reason of said road passing through or upon the land of such owner or owners, towards the extinguishment of such claim for damages; and the said jury shall reduce their inquisition to writing, and shall sign and seal the same; and it shall then be returned to the clerk of the court of common pleas for said county, and by such clerk filed in his office, and shall be confirmed by the said court at its next session, if no sufficient cause to the contrary be shown; and when confirmed, shall be recorded by said clerk, at the expense of said company; but if set aside, the court may direct another inquisition, to be taken in the manner above prescribed; and such inquisition shall describe the property taken, or the bounds of the land condemned; and such valuation, when paid or tendered to the owner or owners of said property, or his, her, or their legal representatives, shall entitle said company to the full right to said personal property, and the use and occupation of said landed property, for the purposes of said road thus valued, as fully as if it had been conveyed by the owner or owners of the same; and the valuation, if not received when tendered, may at any time thereafter be received from the company without cost, by the owner or owners, his, her, or their legal representative or representatives; and that such sheriff or summoner and jurors, shall be entitled to demand and receive from said company the same fees as are allowed for like services in cases of fixing the valuation of real estate, previous to sale under execution.

§ 14. That whenever, in the construction of said road, it shall be necessary to cross or intersect any established road or way, it shall be the duty of the said president and directors of said company, so to construct the said railroad across such established road or way, as not to impede the passage or transportation of persons or property along the same; or when it shall be necessary to pass through the land of any individual, it shall also be their duty to provide for such individual proper wagon ways across said road, from one part of his land to another, without delay.

§ 15. That if said company should neglect to construct proper

wagon ways across said road, as required by the fourteenth section of this act, it shall be lawful for any individual to sue said company, and to be entitled to such damages as a jury may think him or her entitled to, for such neglect on the part of said company.

§ 16. That if it shall be necessary for such company, in the selection of the route or construction of the road to be by them laid out and constructed, or any part of it, to connect the same with, or to use any turnpike road, or bridge, made or erected by any company or persons incorporated or authorized by any law of this State, it shall be lawful for the said president and directors, and they are hereby authorized, to contract or agree with any such other corporation or persons, for the right to use such road or bridge, or for the transfer of any of the corporate or other rights or privileges of such corporation or persons, to the said company hereby incorporated; and every such other incorporation, or persons incorporated by or acting under the laws of this State, is, and are hereby authorized to make such an agreement, contract, or transfer, by and through the agency of the person authorized by their respective acts of incorporation to exercise their corporate powers, or by such persons as by any law of this State are entrusted with the management and direction of said turnpike road or bridge, or of any of the rights and privileges aforesaid; and any contract, agreement, or transfer, made in pursuance of the power and authority hereby granted, when executed by the several parties, under their respective corporate seals, or otherwise legally authenticated, shall vest in the company hereby incorporated, all such road, part of road, rights and privileges, and the right to use and enjoy the same, as fully, to all intents and purposes, as they now are, or might be, used and exercised by the said corporation, or persons in whom they are now vested.

§ 17. That the said president and directors shall have power to purchase with the funds of the company, and place on any railroad constructed by them, under this act, all machines, wagons, vehicles, or carriages, of any description whatsoever, which they may deem necessary or proper, for the purpose of transportation on said road; and that they shall have power to charge for tolls upon, and the transportation of persons, goods, produce, merchandise, or property, of every description whatsoever transported by them, along said railway, any sum not exceeding the following rates: on all goods, merchandise, or property, of any description whatsoever, transported by them, a sum not exceeding one and a half cents per mile, for toll, and five cents per mile, per ton,

for transportation, on all goods, produce, merchandise, or property, of any description whatsoever, transported by them or their agents; and for the transportation of passengers, not exceeding three cents per mile for each passenger; and it shall be lawful for any other company, or any person or persons whatsoever, paying the tolls aforesaid, to transport any person, merchandise, produce or property, of any description whatsoever, along said road, or any part thereof; and the said road, with all their works, improvements and profits, and all machinery on said road for transportation, are hereby vested in said company, incorporated by this act, and their successors for ever; and the shares of the capital stock of said company shall be deemed and considered personal property, transferable by assignment, agreeably to the by-laws of said company.

§ 18. That any other railroad company now or hereafter to be chartered by the law of this State, may join and connect said road with the road hereby contemplated, and run cars upon the same, under the rules and regulations of the Cleveland and Pittsburgh Railroad Company, as to the construction and speed of said cars; and full right and privilege is hereby reserved to the State, or the citizens, or any company incorporated by authority of this State, to cross the railroad hereby incorporated: *Provided*, that in so crossing, no injury shall be done to the works of the company hereby incorporated.

§ 19. That the said president and directors shall, semi-annually, declare and make such dividend as they may deem proper of the net profits arising from the resources of said company, deducting the probable amount of outstanding debts and the necessary current and contingent expenses, and that they shall divide the same amongst the stockholders of said company in proportion to their respective shares.

§ 20. That if any person or persons shall wilfully, or by any means whatsoever, injure, impair, or destroy any part of said railroad, constructed by said company under this act, or any of the work, building or machinery, of said company, such person or persons so offending, shall each of them, for every such offence, forfeit and pay to said company a sum not exceeding threefold the damages; which may be recovered in the name of the company, by an action of debt, in the court of common pleas for the county wherein the offence shall be committed; and shall also be subject to an indictment in said court, and upon conviction of such offence, shall be punished by fine and imprisonment, at the discretion of the court.

§ 21. That if said railroad shall not be commenced in three years from the passage of this act, and shall not be finished within fifteen years from the time of the commencement thereof, then this act to be null and void.

§ 22. That if the legislature of this State shall, after the expiration of thirty-five years from the passage of this act, make provision by law for the repayment to said company of the amount expended by them in the construction of said railroad, and the value of the necessary permanent fixtures thereto, at the time, with an addition of fifteen per cent. thereon, together with interest on the cost of the road, at the rate of six per cent. per annum, unless the dividends shall have amounted to six per cent. per annum; of which expenditure an accurate statement in writing, attested by the oaths or affirmations of the officers of said company, shall be submitted to the General Assembly, if required; then said road and fixtures shall vest in and become the property of the State of Ohio.

§ 23. Whenever the dividend of said company shall amount to a sum exceeding the amount of six per cent. per annum, upon the cost of said road, and the necessary expenses of the same, the legislature of this State may impose such reasonable taxes on the amount of such dividend as may be received from other railroad companies.

WILLIAM MEDILL,

Speaker pro tem. of the House of Representatives

ELIJAH VANCE,

Speaker of the Senate.

March 14, 1836.

STATE OF OHIO,

Secretary of State's Office, }

Columbus, December 30, 1845. }

I, Samuel Galloway, Secretary of State, do hereby certify, that the foregoing is a true copy from the original on file in this office.

SAMUEL GALLOWAY,

Secretary of State.

AN ACT

To revive and amend the act entitled “an Act to incorporate the Cleveland and Pittsburgh Railroad Company,”

PASSED MARCH 14, 1836.

§ 1. *Be it enacted by the General Assembly of the State of Ohio,* That the act entitled an act to incorporate the Cleveland and Pittsburgh Railroad Company, passed March fourteenth, one thousand eight hundred and thirty-six, be, and the same is hereby revived, except so far as the same shall be inconsistent with the provisions of this act; and that John S. Blakely, James Farmer, James Stewart, George M’Cook, Joshua Dawson, Albert G. Catlett, Zadoc Street, and John Dellenbach, of Columbiana County; John W. Allen, Charles Bradburn, Irad Kelley, Samuel Starkweather, Philo Scovill, Thomas Bolton and Samuel Williamson, of Cuyahoga County; Cyrus Prentis, Robert F. Paine, Plimmon C. Bennet, and William R. Henry, of Portage County; William M’Cullough, of Jefferson County; Sylvester Thompson and Birdsey Booth, of Summit County, are hereby appointed commissioners, instead of those named in the above recited act; and the said commissioners hereby appointed, or a majority of them, are hereby authorized to proceed, after having given thirty days’ notice in one newspaper printed in each of the above named counties, to cause books to be opened for the purpose of receiving subscriptions to the capital stock of said company, in the manner provided for in the above recited act, by which they shall in all respects be governed, except so far as the same may be inconsistent with this act.

§ 2. The Railroad mentioned in the above recited act shall commence at a convenient place in the city of Cleveland, in the county of Cuyahoga, and thence on the most direct, practicable, and least expensive route to the Ohio River, at the most suitable point; and if the said railroad shall not be commenced within five years from the passage of this act, and if said railroad shall not be completed within twelve years from the commencement thereof, then this act shall be null and void: *Provided*, that said company may unite said railroad by them constructed at some point south-easterly of the city of Cleveland, with any other railroad authorized by law, which may be constructed on the easterly side of the Cuyahoga river, leading to Cleveland, and to make

such arrangements as to the division of labor and earnings, as the directors of the companies owning such united railroads may deem equitable.

§ 3. That it shall be lawful for said corporation to commence the construction of said railroad or way, and enjoy all the powers and privileges conferred by this act and the act hereby revived, as soon as the sum of fifty thousand dollars shall be subscribed to said stock, and the payment thereof considered safe and secure.

§ 4. That in obtaining the right or way, and procuring materials for the construction and repair of said road or way, the said corporation shall in all respects be governed by an act entitled "An act to amend the act entitled an act for the regulation of turnpike companies," passed March eleventh, one thousand eight hundred and forty-three; and all claims for damages as aforesaid, shall be settled and adjusted according to the provisions of this act.

§ 5. The said company shall have power to demand and receive, for the transportation of persons and property over said road, or any portion thereof, the following rates of fare and tolls: For each person not more than four cents per mile; and for each ton weight of property not more than eight cents per mile; and in the same proportion for greater or less distance or weight.

§ 6. The said company, by its proper officers duly authorized by the directors, is hereby authorized and empowered to mortgage, hypothecate, or pledge, all or any part of said railroad, or of any other real or personal property belonging to said company, or of any portion of the tolls and revenues of said company, which may thereafter accrue, for the purpose of raising money to construct said railroad, or to pay debts incurred in the construction thereof.

§ 7. That so much of the act hereby revived and amended as is inconsistent with the provisions of this act, is hereby repealed.

JOHN M. GALLAGHER,
Speaker of the House of Representatives.

DAVID CHAMBERS,
Speaker of the Senate.

March 11, 1845:

STATE OF OHIO,
Secretary of State's Office, }
Columbus, December 27, 1845. }

I, Samuel Galloway, Secretary of State, do hereby certify that the foregoing is a true copy from the original on file in this office.

SAMUEL GALLOWAY,
Secretary of State.

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